VIPER

Users Guide & Operation Manual

Version 2.0 US

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Important Safety Information

- Please read these safety instructions before unpacking and setting up your unit. It is important you follow all the warnings on the printer.
- Only connect your DTG Viper™ to a grounded, 110/120 volt outlet.
- All equipment must be connected to grounded outlets. Do not use the same outlet for any other system such as a copy machine or an air control unit that turns on and off.
- Connect the printer to a power outlet that can easily be seen.
- Make sure you do not let the power cord get damaged and don't connect the unit with a damaged cord.
- If you are using an extension cord make sure the power ampere rate does not exceed the cord ampere rate of the printer.
- Keep any items containing magnetic fields, such as electromagnetic devices, away from your printer.
- Keep the printer away from locations with high humidity, vibrations, debris or dust.
- Leave enough space around the printer for proper ventilation.
- Prevent any sudden shocks to your printer, such as dropping the unit.
- Do not leave the printer near heat sources such as radiators, heat vents, or direct sunlight.
- Place the printer on a flat table or on a stable surface that extends around the printer.
- The printer will not work properly if it is on an uneven surface or tilted or leaning in any way.
- Be careful when transporting the printer – keep it upright (not on its side or upside down) so you do not spill the ink or waste ink container.
- Always turn the printer off before cleaning and clean with a cloth dampened with cleaning solution. Do not spill any liquid on the printer.
- Caution: Do not unplug the printer to shut it off. Use the power button instead. Do not unplug the printer until the green power light is off.
- Do not block any of the printer's vents or insert anything foreign in its slots.
- Do not try to service the printer yourself, except where described in this manual. If you need service, contact your dealer for your service options.

Safety Instructions for Using the Printer and Handling Ink

- Always keep ink and other consumables out of the reach of children.
- Be careful not to spill ink on your skin or in your eyes. If any ink does get on your skin wash it thoroughly with soap and water. If ink gets in your eyes flush them out immediately with water.
- Do not put your hand in the printer or touch the dampers once printing.
- Do not move the printer head by hand while the printer is on; doing so may damage the printer.
- Store the ink in a cool, dark place.
- Store the inks in a room temperature environment.

1. Introducing DTG Digital Printers

DTG Digital printers are one of the most distinct ranges of inkjet flat bed printers available today. These direct inkjet printers are capable of printing on many different materials, even materials with light and / or uneven surfaces.

Using our specialized textile pigment inks, you can print directly to cotton or cotton blend fabrics, such as those used in T-Shirts. There is a short pre-treatment process required for printing with white ink (such as to dark fabrics), and curing with heat is the process for drying inks for permanent hold.

Most other print materials will need to be pre-treated with our special ink-receptive pre-coatings (Undercoats), and placed on the printer flat tray to be printed with the high- quality piezo drop-on-demand print head. The printed media is dried sufficiently and over coated with top-coats which protect the printed images from water and UV rays.

1.1 The DTG VIPER™

The DTG VIPER™ is a textile-printing unit based on an Epson 4880 inkjet printer. It uses standard inkjet technology with DTG Brand Textile Ink to print on any type of cotton / cotton blend garment or fabric material.

Prior to the development of DTG brand textile inks for inkjet printers, printing on fabric with an inkjet printer used to be quite difficult – standard inkjet inks that are used to print on paper do not stand up to regular washing when printed onto most fabrics. DTG Brand Textile inks have been specifically designed to print on fabrics and garments with only a post treatment of heat needed to set the ink. DTG Brand White Ink has been specifically designed for printing to dark fabrics & garments, and additionally requires a pre-treatment be sprayed to the fabric / garments.

By using DTG Brand Inks, the DTG VIPER™ will successfully print on light colored 100% cotton, some 50% cotton 50% polyester blends. Depending on the image you are printing, 100% cotton will produce the brightest prints, as the colors on polyester/cotton blends may appear slightly dull. Poly Cotton blends should be tested as results can vary.

For darker colored garments requiring a white ink underbase, your DTG VIPER™ will produce excellent results on 100% and low polyester content cotton blends.

Use only DTG TEXTILE PRETREATMENTS

There are many applications for DTG VIPER™ printing. Besides T-Shirts, it can print on ladies' tops, men's polo shirts, tote bags, aprons, towels, caps, mouse pads and bibs. Some products will require pre-treatment with undercoats as well as the application of top coats to protect the print. By using DTG NON-TEX PRE and POST Treatments you can also print on a range of non-textile items such as wood, glass, tiles, golf balls etc.

The DTG VIPER™ with White Ink will require not only the standard Windows printer driver for your computer, but also our specially developed RIP program that "interprets" the image data and converts it to instructions relating to the printing of white ink for the printer. Printer Drivers for Windows and the RIP software have been included in your DTG VIPER™ package. You can create your artwork from many graphic applications such as Adobe Photoshop, Adobe Illustrator, Adobe InDesign, CorelDraw, QuarkXPress, Macromedia Freehand, and others and simply print as you would to any desktop printer by using the virtual printer driver for the RIP Pro software.

1.2 DTG Brand Textile Inks

The Epson 4880 printer, and therefore the DTG VIPER™, is based on a CMYK color process. This process uses blends of 4 colors to make every color in the spectrum. The colors are Cyan, Magenta, Yellow and Black. Specifically, the Epson 4880 uses an eight color process using two shades of Cyan, Magenta and three shades of Black. The 4 CMYK colors are the primary colors. The light shades provide an accent to the primary colors giving them a richer blend.

In the DTG VIPER™ with White Ink, the light colors are replaced with White Ink. White Ink is a water-based titanium dioxide solution. The titanium dioxide is ground into a fine powder and mixed with other binders to allow it to dry and adhere to the pre-treated fabric. Titanium dioxide is what gives the ink its bright white properties, and this brightness gives the colored ink layer a vibrant and rich color.

White Ink Properties and Maintenance

Because of the chemical properties of white ink it requires much more maintenance than the color inks. Titanium dioxide is a mineral and does not dissolve in liquids. This means that the titanium dioxide will, over a period of time, settle to the bottom of the container. Once complete, separation of the titanium dioxide from the binders and other components in the ink cannot be reversed! It is therefore critical that the ink be shaken daily, or at minimum every 2-3 days. This includes any unused white ink that you may have in stock. White Ink Pre-Treatment should also be shake at least once a week.

The VIPER™ has a Circulation system know as WIMS (White Ink Management System). This technology supplies white ink to the print head but when the printer is idle the white ink is circulated back to the bulk white ink bottle at the back of the machine. These cycles of circulation prevent the Titanium dioxide from settling in the tubes and white ink bottle. The circulation system greatly reduces separation but does not prevent clogging in the nozzles by the white ink or color ink. The printer still needs to be operated on a regular basis to prevent this.

To keep the ink "moving" in the ink tubes and dampers, it is recommended that at minimum you print an 8in x 10in (20cm x 26cm) image with white ink daily. If the DTG VIPER™ has not printed white ink for a few days, you may need to execute several head cleaning cycles in a row to charge the damper with rich white ink from the circulation system and to push out any developing clogs in the nozzles.

Using Other Ink Brands
Your DTG VIPER™ package included bottles of DTG Brand Textile Inks. This is a specially formulated, water based pigment ink. DO NOT mix or use other ink brands with your DTG Brand Textile inks as this can create major problems. Your DTG Dealer cannot guarantee the performance of your DTG VIPER™ if you choose to run any inks other than DTG Brand in your DTG VIPER™. Using other inks will void your support and warranty.

Using Other Ink Types
Similarly, should DTG release new inks for your DTG VIPER™, you will need to thoroughly flush the ink system of the old ink before charging with the new ink. While this process is relatively straight-forward, it will take approximately ½ - 1 hour of your time. Should this ever occur, written directions will be provided at the time of the change.

Please Note:
Never attempt to use a non-water based ink in your DTG VIPER™ – even mild solvent based inks may cause irreparable damage to the ink tubes, ink valves or even the print head. Use only DTG Cleaning Solution and Flushing Solution. Distilled Water has not cleaning properties and can flush deposites to the dampers and nozzles causing clogs.

Use of inks other than DTG Brand Textile Inks WILL VOID support of all parts that ink touches or flows through.

2 Before you Get Started

2.1 Commit to Maintenance
Your DTG VIPER™ represents a significant investment, not only of your money but also of your commitment to your new business opportunity with the DTG VIPER™.

While the mechanics of the VIPER™ are essentially the same as that of a normal inkjet printer, printing on fabric is not the same as printing on paper. Fabric generates much more dust, printing on fabrics requires a much greater volume of ink, and the white ink pretreatment can become airborne during spraying and can settle on and in the VIPER™. Each of these factors individually can cause problems with your DTG VIPER™, and in combination can be critical to the ongoing operation of the VIPER™. All is not lost, however! A few minutes of your time each day spent undertaking some basic maintenance tasks on the VIPER™ will ensure its continued optimal performance. Please refer to the sections within this User 's Guide on Preventative Maintenance for further information.

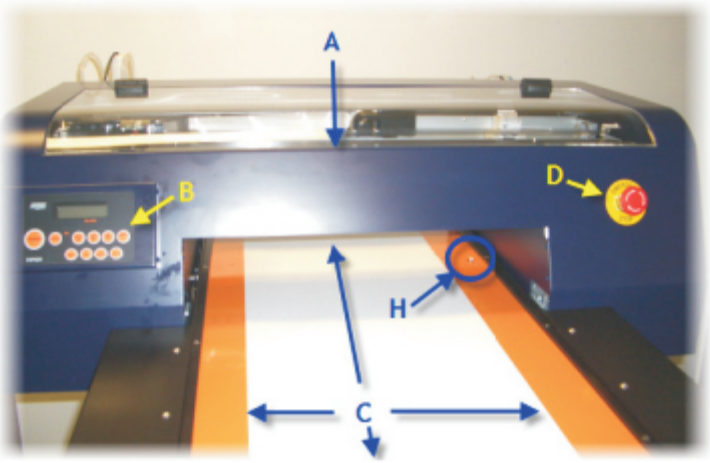
2.2 Get to Know your VIPER™

Starting a new business or adding to your existing product line with the DTG VIPER™ is a very exciting, and potentially very profitable time. Don't get too carried away though and start accepting orders before you even have your printer. Allow plenty of time to become familiar with your VIPER™ and to learn not only the basics, but also the variables that can impact your finished product. These variables include image types and resolution, fabric types, your operating environment, garment preparation, and curing of the garment. **Thoroughly read this manual, ask questions of your DTG Dealer, attend the training provided by your dealer and talk to other users.** Be prepared to ruin a few shirts. Be realistic about deadlines when accepting orders and allow yourself sufficient time to complete the order.

3 Printer Components

*Names below are used in this User's Guide

3.1 General External



A. Head Unit

B. Control Panel

C. Moving Printing Bed (Conveyor)

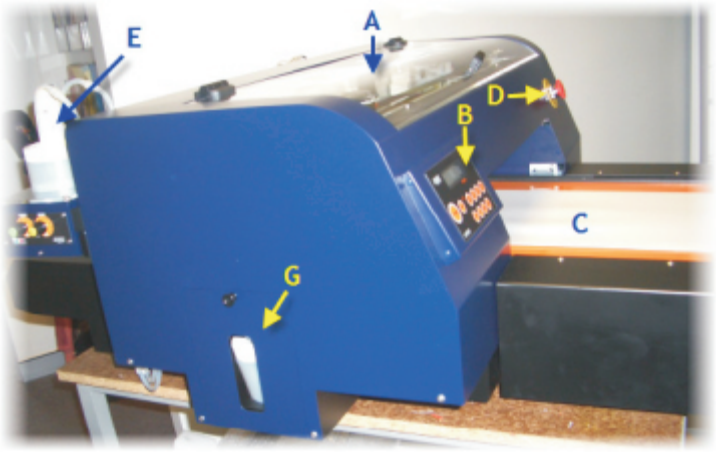
D. Emergency Stop Switch (E-Stop)

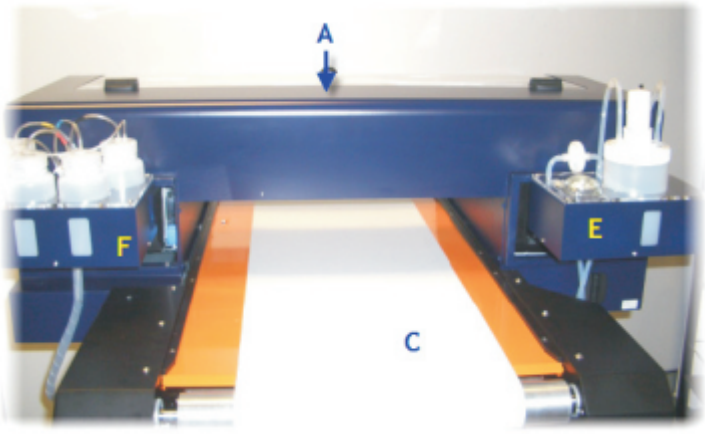
E. WIMS & White Ink Supply

F. CMYK Ink Supply

G. Waste Ink Compartment

H. Media Sensor





3.2 Emergency Stop Switch

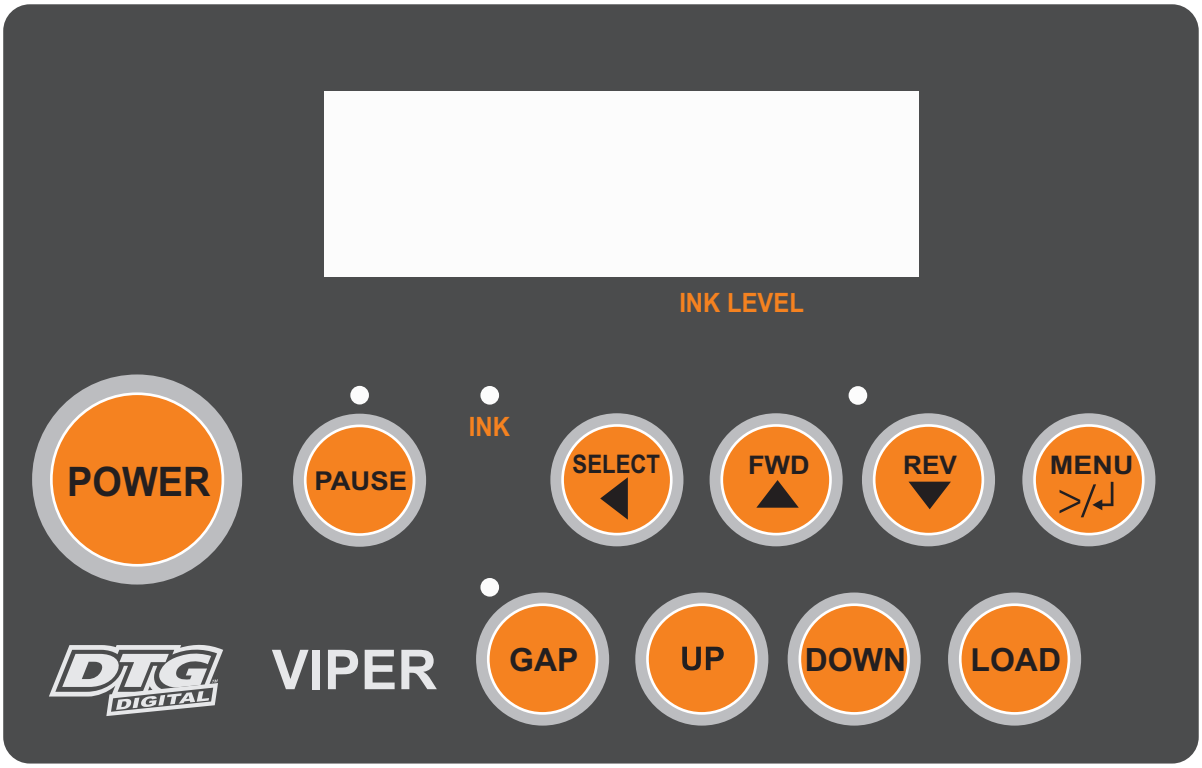
The Emergency Stop button should only be used in an Emergency, for example where there is immediate threat of injury to person or persons by the movement / operation of the DTG Viper. Also any threat of damage to the print head such as a head strike or any head contact with the media.

Engage the Emergency Stop by pushing the red knob forcibly. This will interrupt A/C power supply to the DTG Viper™ and all current printer operations will cease.

Note: When the Emergency Stop Switch has been engaged, it is important to press the Power Button on the Control Panel (see below) if the Printing Head Unit was on prior to activating the Emergency Stop Switch. This will ensure that the Printing Head Unit is properly powered down upon restart of the printer.

To release the Emergency Stop Switch, twist the red knob in the direction indicated by the arrows.

3.3 Control Panel



Before you attempt to print anything with your DTG Viper, you need to understand the Control Panel, and what the buttons and lights mean:

The Control Panel is located on the front left hand side of the printing head unit, and allows control of the movement of the Moving Printing Bed (forward / reverse & up / down). It also has an LCD display and allows access to various menu options for the printing Head Unit. In addition, there are LED indicators for the status of the Printing Head Unit and Moving Printing Bed.

Buttons

The Power button turns the Printing Head Unit on or off. Note that the main A/C power to the base unit must be connected to the A/C Power Port and switched on at the A/C Power Switch in order for this button, and in fact most functions of the Control Panel to be operable.

The Pause Button has a number of functions:

- Stops printing temporarily. Use the pause button if a print job needs to be stopped (where it is not an emergency)
- Restarts printing if pressed when the printer is paused.
- Clears a print job in the printer's memory if pressed and held for 3 seconds (Reset)
- Returns the printer to the READY state when the printer is in Menu mode.

The Select button is used to select a "paper source" (Roll Auto Cut On / Roll Auto Cut Off / Sheet). Note that this selection should always be Roll Auto Cut Off for normal operation of the DTG VIPER™. It also returns to the previous level menu when pressed in Menu mode.

The FWD (Forward) button feeds the Moving Printing Bed in the forward direction (towards the rear of the printer) only as much as the Moving Printing Bed has been fed by using the reverse button. This button also changes a setting in reverse order when selecting settings in Menu mode.

The REV (Reverse) button feeds the Moving Printing Bed in the paper in the reverse direction (towards the front of the printer). It also is used to change settings when selecting settings in Menu mode.

The MENU button enters the Menu mode when pressed in the READY state. It allows the user to enter the PRINTER STATUS menu if pressed during printing, and selects the current menu in menu mode. Sets the selected setting in Menu mode. Executes the item if the selected item is for execution only. Cleans the print head if pressed and held for 3 seconds.

The Gap On/Off button, when pressed, will turn on or off the Gap Sensor in the Printing Head Unit. The Gap Sensor uses optical sensor to sense objects (such as a wrinkle in a garment) that are in the path of the Print Head. The sensor, when on, will operate during the FWD, REV, LOAD and printing processes to detect any part of the garment or garment platen (or other foreign object) that may intrude upon the pre-defined gap between the print media and the Print Head. This is to ensure that the Print Head will not strike anything during the printing process. Please refer to Control Panel Lights section below for further information regarding the various states of the Gap Button / Light Indicator.

Note: The gap sensor only lowers the platen. The platen will not readjust back to the proper gap. You should set the gap before every load of the platen.

Note: The Printing Head must not hit the garment or the Platen (or any other foreign object). If it lightly brushes the garment you will have to do a head cleaning before the next print. If it even lightly brushes against pre-treated fabric, the pre treat may seal the ink in the head, and you will need to immediately perform several head cleans – and potentially have to replace the Print Head with a new one. If the Print Head hits the garment itself or other object with some force, you may have to replace the Print Head with a new one.

It is therefore strongly recommended that you do not turn off the Gap Sensor at any time.

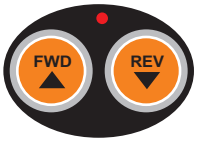
The UP button, when pressed, will raise the Moving Printing Bed (and therefore any media that is positioned on it) until the button is released, the upper limit is reached OR until the Gap Sensor Beam is triggered (which will automatically stop the upward movement of the Moving Printing Bed.

The DOWN button, when pressed, will lower the Moving Printing Bed (and therefore any media that is positioned on it), until the button is released or the lower limit is reached.

The Load button, when pressed, will move the Moving Printing Bed towards the rear of the printer (Forward) until the Media Sensor is triggered (usually by a platen). Once triggered, the bed will roll towards the front of the printer (Reverse) for a small movement, then forward again until the platen edge is resting against the Media Sensor. These movements are very precise, and if the platen is loaded correctly, provide an accurate and repeatable starting position for your prints.

Lights

Lights	Description
Pause Light solid green	The printer is in pause mode.
flashing green	The printer is printing. The printer is cleaning the print head.
light off	The printer is ready to print data.

Ink Light solid red	The ink chip count has reached its limit & requires resetting. There is an error with the ink chip that requires resetting. The maintenance tank chip count has reached its limit & requires resetting.
flashing red	The ink chip count is approaching it's limit & requires resetting. The maintenance tank chip count is approaching its limit & requires resetting.
 Paper Light	This light will not be active during normal operation of the DTG Viper™
Pause, Ink & Paper all flashing	Printer needs service - contact your authorized DTG Distributor
Gap Light (Green)	A Green Gap Light indicates that the Gap Sensor is on in "auto" mode. In this mode, the Printing Bed (and therefore printing media on the Printing Bed) will be lowered automatically if the Gap Sensor is "triggered" by something on the Printing Bed – this may be a wrinkle in the fabric or a foreign object that has been left on the Printing Bed by mistake. This automatic lowering of the Printing Bed minimizes the risk of the Print Head striking any object during the print process. There is considerable risk of permanent damage to the Print Head if it should strike anything during the printing process. It will not readjust after lowering.
Gap Light (Amber)	An Amber Gap Light indicates that the auto-lowering of the Print Bed in response to the Gap Sensor has been disabled. In this mode, the Printing Bed will not lower automatically as it does in "auto" mode. The Printing Bed can be lowered manually by the Down button, however the Up button is disabled in this mode to lessen the risk of the Print Head striking any object during the print process.
Gap Light (Red)	A Red Gap Light indicates that the Gap Sensor is "triggered"

Panel Messages

The messages on the printer's LCD show the printer's current status or notify you of errors. The following table lists the status messages. For error messages, see "Error messages" on page.

Message	Description
READY	The printer is ready to print.
PRINTING	The printer is processing data.
PLEASE WAIT	Wait until READY appears.
PAUSE	The printer is paused.
PRESS PAUSE BUTTON	Press the Pause button.
CHARGING INK	The printer is charging the ink delivery system.
RESET	The printer is being reset.
POWER OFF	The printer is being turned off.
CLEANING	The printer is cleaning the print head.

Menu Settings

There will be, on occasion, a need to use some of these available menu options. Note that many of the menu options available are preset for the DTG Viper and should not be changed. This section gives an overview of the menu setting procedure. Further sections will describe specific menu functions in detail.

Basic Menu Setting Procedure

This section describes how to enter Menu mode and select settings with the buttons on the control panel.

Note:

Press the PAUSE button whenever you want to exit the printer menu and return to the READY state.

Press SELECT to return to the previous menu.

1. Enter Menu mode

Make sure that READY appears on the printer's LCD, and then press the MENU button to enter the printer's menu system.

2. Select a menu

Press FWD (Forward) or REV (Reverse) to select a sub menu.

3. Enter the sub menu

Press MENU to enter the selected sub menu. The first menu item appears on the printer's LCD.

4. Select a setting

Press FWD (Forward) or REV (Reverse) to select a setting.

5. Set the setting

Press MENU to set the selected setting. The first item appears on the printer's LCD.

6. Select an option

Press FWD (Forward) or REV (Reverse) to select an option for the setting

.

7. Set the option

Press MENU to set the selected option. If the parameter is for execution only, press to execute the function for the setting. After execution, the printer exits the printer menu and returns to the READY state.

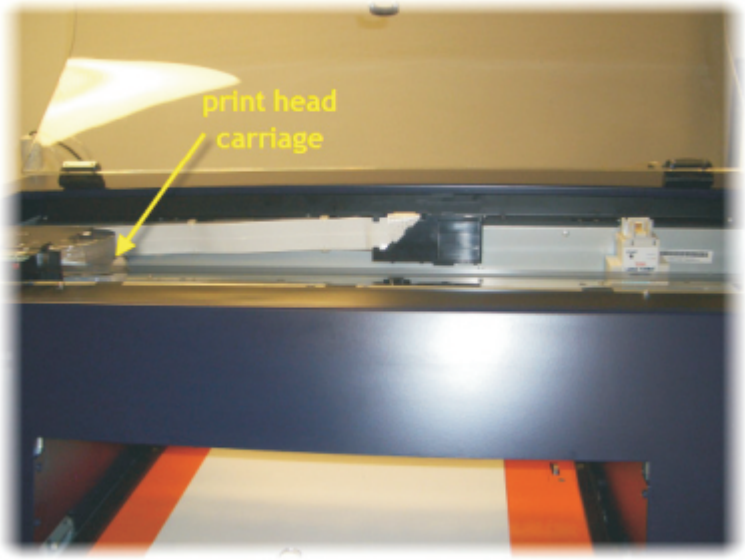
8. Exit the Printer Menu

Press the PAUSE button. The printer returns to the READY state.

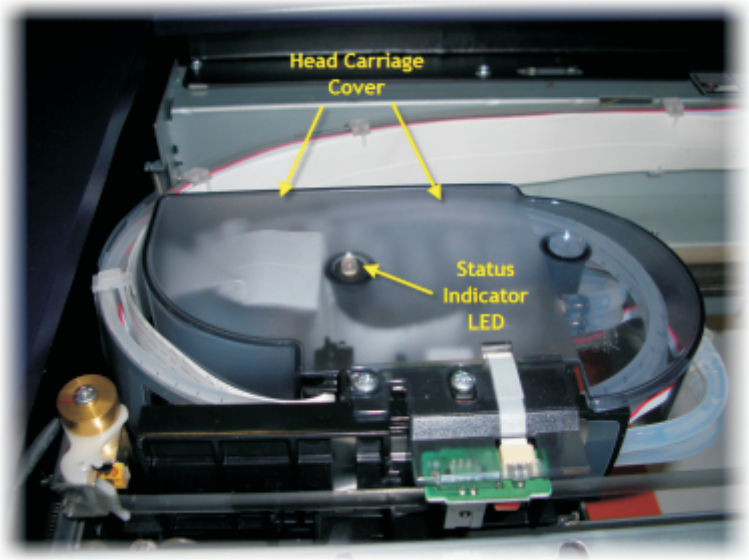
3.4 Printer Head & Carriage

The Head Unit contains the components described below:

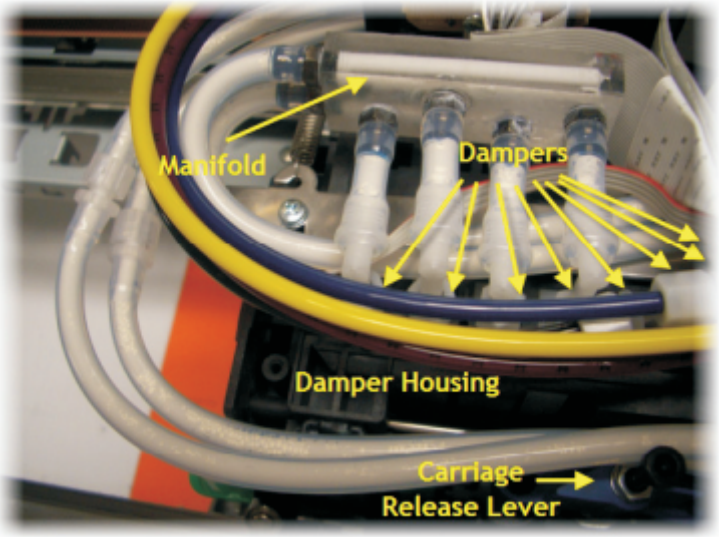
The Print Head itself is seated within the Print Head Carriage, which during normal operations travels right & left allowing the print head to deposit ink across the printing media.



The printing face of the Print Head protrudes from an opening in the base of the Print Head Carriage.



The Carriage itself has a grey translucent cover which secures the ink tube assembly and dampers. In the centre of this cover is the Viper Status Indicator LED



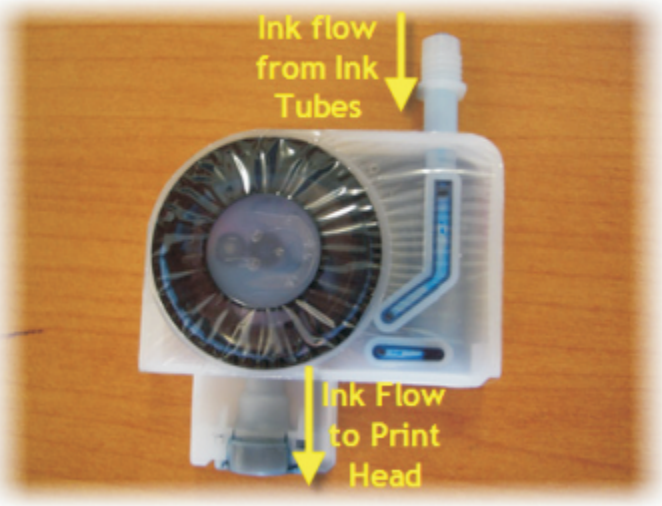
This image shows inside the Print Head Carriage with the Carriage Cover removed. The ink tubes from the printer CMYK ink bottles each connect to L shaped tubes which in turn each connect to a damper contained within the Print Head Carriage. Each Damper sits on one of 8 nipples or spikes which feed ink into the Print Head. Dampers are a consumable item which normalize the flow of ink to the print head and also act as a primary ink filter.

The ink tubes (feed & return) from the printer white ink bottle each connect to one end of the WIMS manifold, which in turn connects to 4 dampers also contained within the Print Head Carriage. As with the CMYK dampers, each of the four White Ink Dampers sits on one of 8 nipples or spikes which feed ink into the Print Head.

This image shows a Damper and describes the flow of the ink from the ink tubes through the damper and to the Print Head.

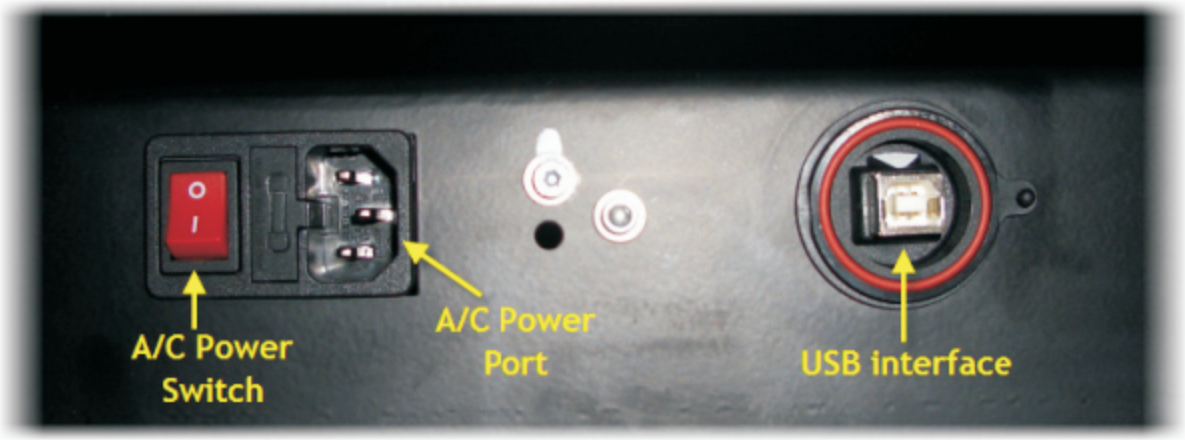
The damper is a filter for the minute amount of impurities that will build up after time. The damper prevents these impurities from entering the print head nozzles. The dampers will eventually reach the point where ink will not flow enough to replenish the nozzles and must be changed.

Dampers should be replaced once a year or when ever a particular channel experiences ink starvation.



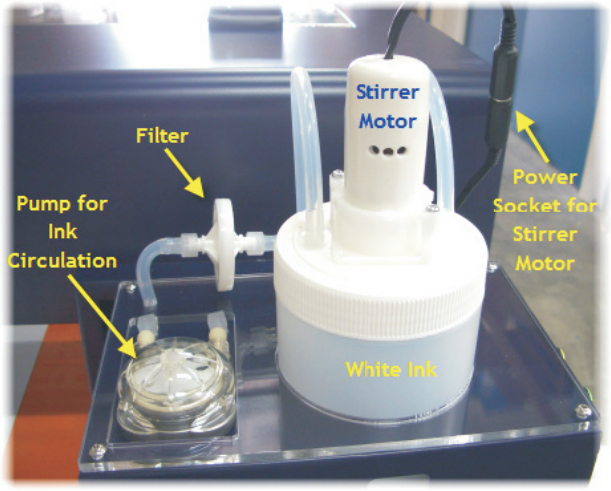
3.5 Power & Communications Ports

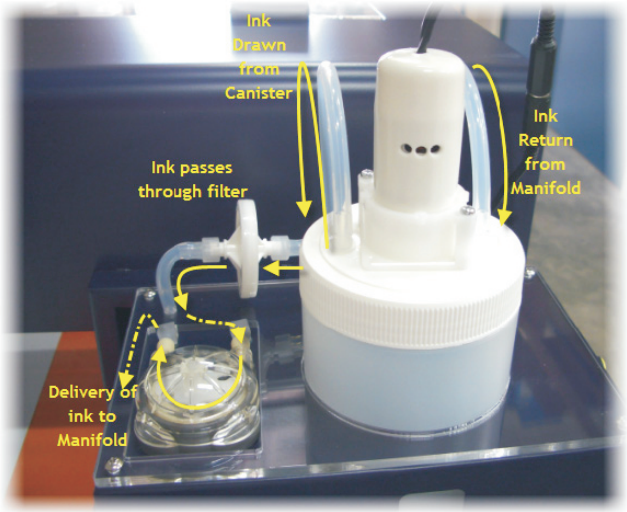
The Power and Communications Ports are located at the rear of the main Viper base unit.



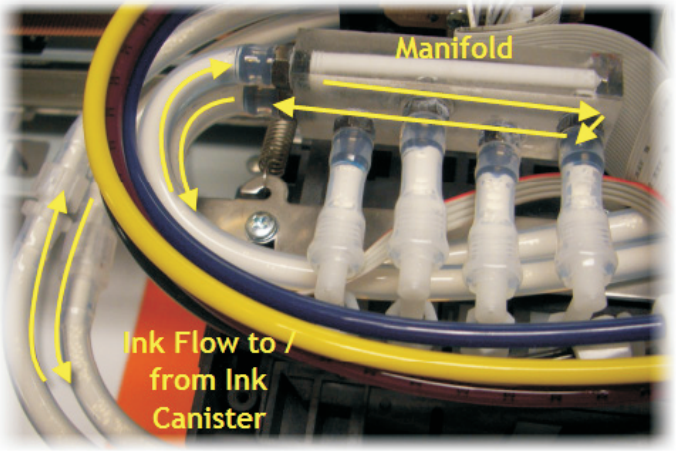
3.6 WIMS (White Ink Management System)

A patented new process called White Ink Management System (W.I.M.S) is built into your DTG Viper™ and aims to reduce White ink clogging and starvation on machine models using Piezo head technology (such as the Viper). It does so primarily by providing a continuous, pulsating circulation of white ink through the ink tubes and ink bottle, and by maintaining a positive pressure of the ink through the entire white ink supply system. The pulsating pressure is designed to prevent settling in the dampers due to stagnation.



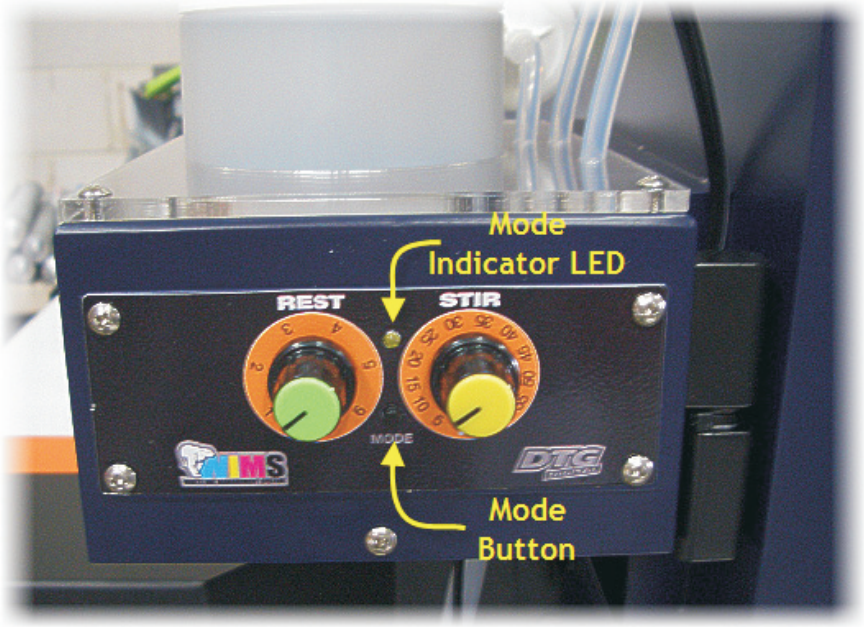


These photographs shows a WIMS model with arrows to indicate the ink flow when the WIMS unit is cycling.



The WIMS circulation pump runs continuously while the printer is supplied with main power. The operation of the stirring motor is regulated by the setting of the dials on the front of the WIMS Control Panel.

WIMS Control Panel



REST Dial
The REST Dial allows setting of the period of time (increment in hours) that the stirring motor & paddle will “rest” or not stir the ink. Settings are in effect when the unit is powered on, to change the settings you will need to turn the power to the unit off first, change the dial setting and then repower the unit.

STIR Dial
This dial allows setting of the period of time (increment in minutes) that the stirring motor & paddle will stir the ink, in between rest periods. Settings are in effect when the unit is powered on, to change the settings you will need to turn the power to the unit off first, change the dial setting and then re-power the unit.

Mode Indicator LED
During normal operation of the WIMS, this indicator will not be lit. It may flash or glow solid during other various modes of operation as described below in section 0.

Mode Button
The WIMS will always start in STIR mode, for the duration of time (minutes) as indicated by the STIR dial when power is provided to the WIMS unit. Once the STIR time duration has been reached, the WIMS unit will go into REST mode for the period of time as indicated by the REST dial (hours).

Diagnostic Mode: By pressing & holding the Mode button as the WIMS unit is powered up, the WIMS unit is set to diagnostic mode. As the motor / paddle stirs, the Mode indicator LED will flash for the number of minute increments as shown on the STIR dial indicator. When the motor / paddle rests, the Mode Indicator LED will flash for the number of hour increments as shown on the REST dial indicator. This mode is useful to confirm the calibration of the dial indicators. For example – referring to the photograph above of the control panel, the REST dial is set between 2-3 hours (2 time increments), and the STIR dial is set to approximately 15 minutes (3 time increments). In Diagnostic Mode, the motor will stir for approximately 3 seconds, and the Mode Indicator LED will flash 3 times (representing the 3 time increments for stirring) . The motor will then stop stirring for approximately 2 seconds, and the Mode Indicator LED will flash 2 times (representing 2 full rest time increments).

Manual Override: While the WIMS unit is in normal operating mode, if you press & hold the Mode Button for 2-3 seconds, it will go into manual override – ON mode, and the motor will continuously stir. While in this mode, if the mode button is pressed & held for 2-3 seconds, the unit will go into manual override – OFF mode, and the unit will stop stirring. To reset to normal operating mode, power must be disconnected & reconnected to the WIMS unit.

4 Getting Started

- Read all instructions through thoroughly, (including the safety instructions), before unpacking your DTG Viper™ unit, and then follow all directions as you prepare your unit for printing.
- Prepare an area to set up your DTG Viper™ unit.
- Unpack and set up the unit as per the instructions in Section 5.1 of this manual.
- Fill the ink bottles as per the instructions in Section 5.2 of this manual.
- Install the Epson Driver BEFORE installing the RIP software. Epson Drivers can always be downloaded from Epson's website www.Epson.com if misplaced or outdated.
- Read Section 6.4 on printing t-shirts. This section explains what the control panel buttons and lights are for, the basic steps to printing on a t-shirt and how to cancel a print job.
- Section 8 covers general maintenance and problems you may encounter with the printing process.
- Training for your DTG should be done immediately! Training helps you understand these important techniques and procedures that help maintain the printer for best performance and archive the best quality out of your prints.

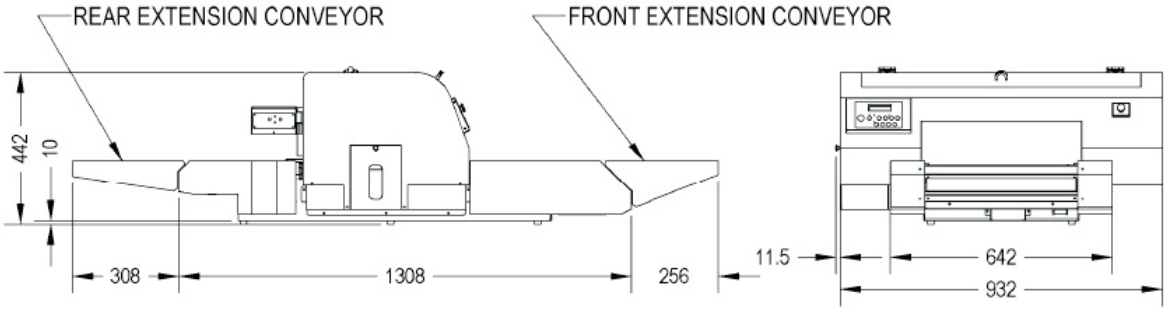
5 Printer Set Up

Please Note: *Keep all packaging, holding fixtures and instructions for the DTG Viper™ as you will need them if you have to transport your system anywhere or to return it for repair. There is a section in the back of this manual on transporting your printer. Please ensure you read and follow these instructions.*

5.1 Unpacking and Positioning the DTG Viper™

Please read the following directions through before unpacking your DTG Viper™:

- Prepare a work area suitable for using the DTG Viper™. Allow extra room for your computer, replacement inks and space to work. See diagram below for approximate dimensions of the unit and minimum workspace area required. Dimensions are in millimeters.



- Prepare a work area with a **solid work table** that will not vibrate when using the DTG Viper™. Allow extra room for your computer, replacement inks and space to work. Note that you will require access to the rear of the printer in order to perform maintenance functions.

- Carefully uncrate the printer and gather all spares and additional components. DO NOT lift the printer by the conveyor, but rather from beneath the main body of the printer.

- Place the printer on the work table which should be leveled first.

- The unit must be kept away from direct sunlight, dusty areas, excessively high humidity, strong magnetic forces and direct airflow which can dry out and clog the printing heads. It is highly recommended that the unit be kept in a dust free, air conditioned environment, with temperatures no less than 41° Fahrenheit (5° C) and no more than 86° Fahrenheit (30° C) with humidity levels between 40 and 70% at all times.

- Provide a separate room for the spraying of pre-treatment to the garments prior to printing. If a separate room is not possible, you must allow a minimum of 5m between the spray station and the DTG Viper, and ensure that forced extraction of the pre-treat vapor is carried out. Failure to adhere to these recommendations will result in erratic print quality and the need for numerous head cleans both before & during printing. This erratic behavior is likely to worsen until the print head fails and has to be replaced.

- Protect any carpet or floor covering with mats or old carpet as there is a risk of spilling ink when you refill the printer ink bottles.

- Place the DTG Viper™ close to the heat source that you are using to cure the ink so that you have a smooth workflow, but ensure that heat does not radiate directly on to the DTG Viper™. No closer then 5 feet. If you have more than one DTG Viper™, place them around the heat source or close to it for operational efficiency.

- Remove any packaging covering the unit. Check the unit carefully for shipping damage. If you find any obvious damage please contact the freight carrier immediately to arrange a freight inspection.

- Remove any tape holding the Clear Perspex Printing Head Unit Cover closed.

- Open the clear perspex Head Unit cover and unlock the print head carriage by pulling the green tab to the right. Do not remove the tab.

Caution: Do not push the green tab down or you may break it.

- Remove any tape holding the waste ink bottle in place (in the waste ink compartment).

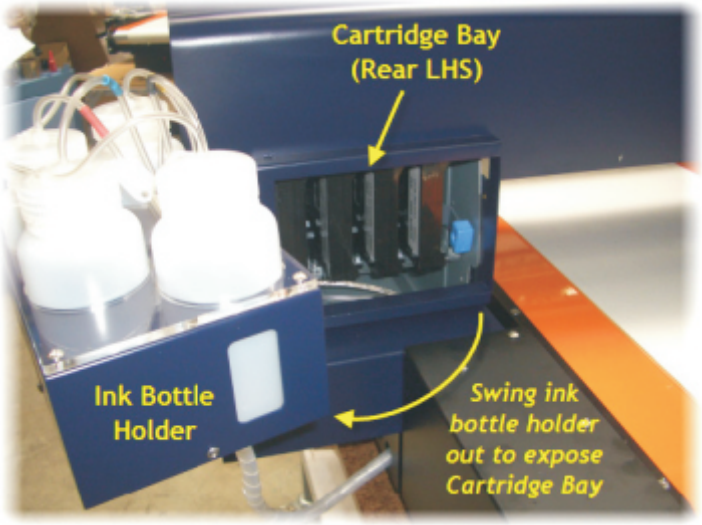
- Fit the Front & Rear Extension Conveyors

- Connect the power supply cable and note (but do not connect) the printer USB interface cables with your PC. Do not use an interface cable that is longer than 2 meters. Do not use a USB Hub or USB extension cable as erratic prints may result.

- DO NOT turn the printer on just yet.

5.3 Installing “dummy” Cartridges

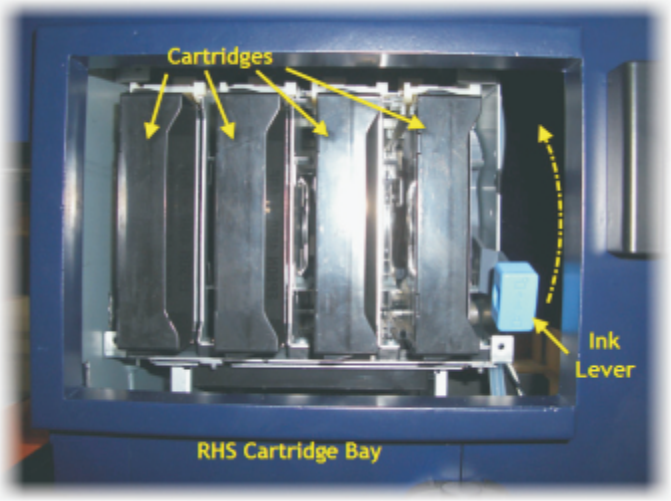
As discussed previously, your DTG Viper™ is based on the Epson Stylus Pro 4880 printer. This standard printer uses 110 or 220 ml ink cartridges instead of the dampers and bulk ink system used in the DTG Viper™. The standard printer uses micro-chips on the ink cartridges to “count” ink drops that pass through the print head to determine when a particular cartridge is getting low on ink. The printer will then flash the corresponding cartridge indicator on the Control Panel as a visual warning to the user. This function is embedded in the firmware of the printer and as such is a function which carries over to the DTG Viper™. Neither the Epson 4880 printer nor the DTG Viper™ can tell how much ink is actually in the bulk ink bottles of the DTG Viper™. “Dummy” cartridges are provided with your DTG Viper™ purely to satisfy the firmware requirement that cartridges are installed.



These cartridges should be installed into the correct slots in the left & right cartridge bays which are located behind the ink bottle & WIMS holders at the rear of the printer (the ink bottle & WIMS holders are hinged and swing outward to reveal the cartridge bays).

To install cartridges, raise both the left & right ink levers to unlock the cartridge bays, and insert the cartridges into the correct slots. Refer to the picture here for the correct direction for insertion. Once cartridges have been installed, lower the ink levers to lock the cartridges in place.

Note: If you can’t insert the cartridge smoothly, you may have the wrong cartridge. Check the cartridge color against the order listed below. If the ink light remains on after installing the cartridge, it may not be inserted fully.



The proper cartridge order, when facing the rear of the printer is as follows:

- Left Hand Cartridge Bay: Photo Black, Cyan, Vivid Magenta,Yellow
- Right Hand Cartridge Bay: Light Black, Light Cyan, Vivid Light Magenta, Light Light Black

Note that ink consumed during printing, head cleans and ink charges all contribute to the ink drop count, once the count reaches the limit for the installed cartridge(s) it will signal warnings & will require cartridge reset. These issues are discussed in detail in Section 6.7.

5.4 Installing & Using Printer Drivers

Please note: Before starting this part of the set up process, we recommend you turn OFF all screen savers when installing your software and printing to your DTG Viper™. If you have any problems installing the Printer Drivers or the RIP software, please call the Support Department at your DTG Agent / Dealer for help.

A printer driver is a piece of software that converts the data to be printed to the form specific to a printer, and it is usually supplied with a new printing device.

In your DTG Viper™ package you received the Epson Stylus Pro 4880 Printer Driver CD. You need to install the driver CD to operate the printer.

At some time in the future you may need to update your printer driver and you can do this by logging on to the Epson website: http://www.epson.com. Follow the links to the Downloads / Printer Drivers section where you can download the latest drivers.

The Epson Stylus Pro 4880 Printer Driver includes standard maintenance routines for nozzle checks and head cleaning, incorporated into the software. These maintenance routines are essential to the optimal performance of your printer.

This part of the set-up of your DTG Viper™ requires that the Head Unit be powered on. Do so by pressing the Power Button of the front control panel (assuming that the main power supply to the Printer is still switched on).

To Install Printer Driver for Windows

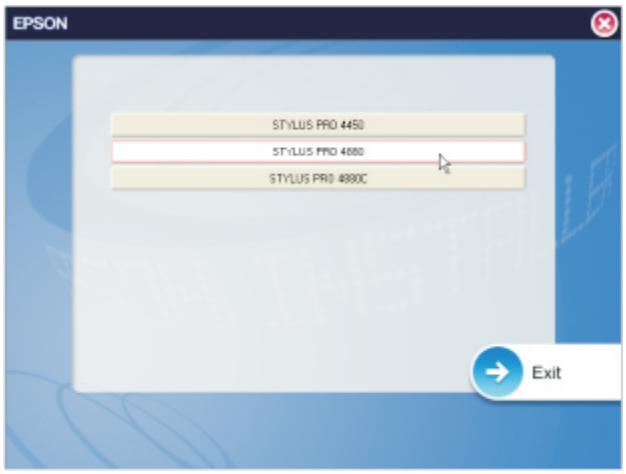
- Make sure your computer and printer are turned on but the printer is NOT CONNECTED to your computer.

  Note: If you see a Found New Hardware Wizard screen, click Cancel and disconnect the USB cable.

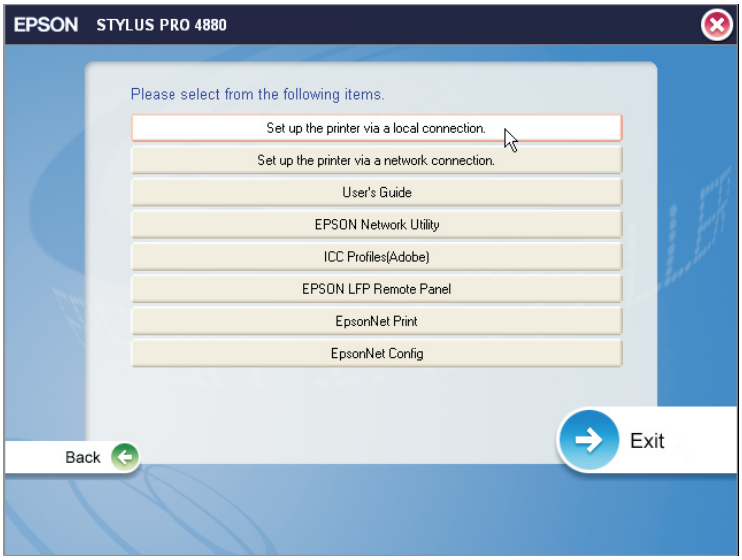
- Insert the Epson Stylus Pro 4880 printer CD.

  Note: With Windows Vista, if you see the AutoPlay window, click Run Epsetup.exe. When you see the User Account Control screen, click Continue.

- Click on Stylus Pro 4880



- Choose “Set up the printer via a local connection.”



- Read & Accept the license agreement – the installation program will copy necessary files to your computer

Note: If you see a message asking if you want to install or run various installation programs, select Continue, Continue Anyway, or Install this driver software anyway.

- When you see a window asking you to connect the printer, connect the USB cable.

Note: With Windows XP, if you see a Found New Hardware Wizard screen after you connect the printer, select No, not this time and click Next. Then click Next again.

Note: If installation doesn’t continue after a moment, make sure you are securely connected and have turned on the printer.

- Click OK to the message that drivers have been installed successfully
- When you’re done, click Exit and remove the CD.

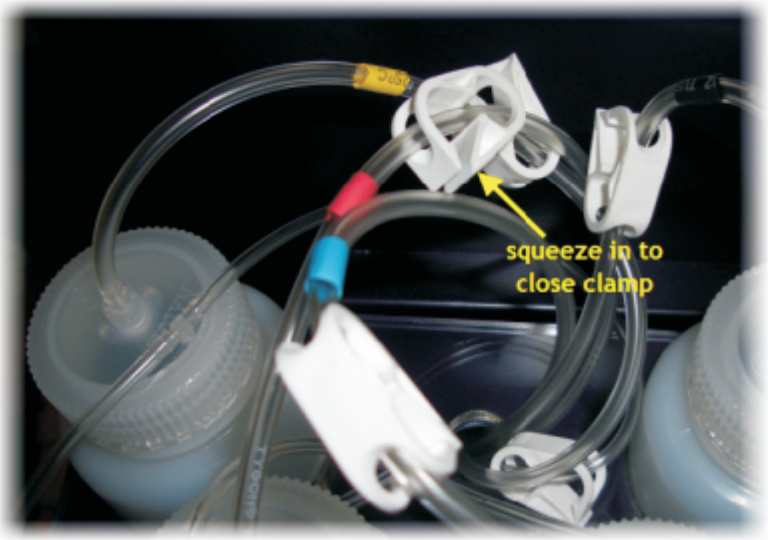
5.5 Filling Ink Bottles

Pour Inks into the Ink Bottles:

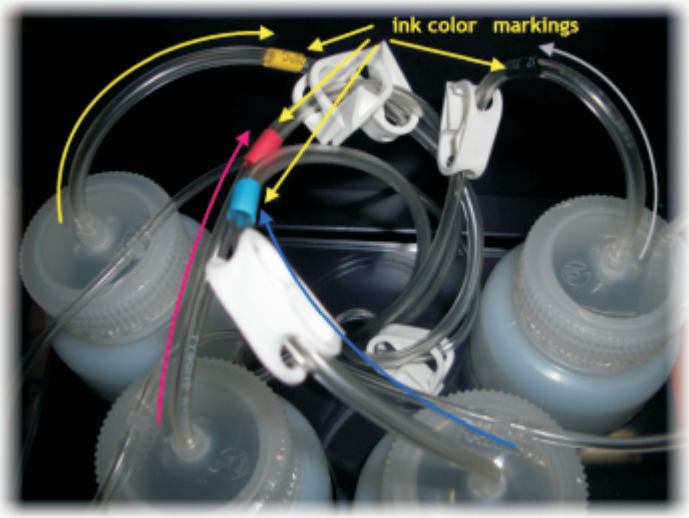
Do **not** put white ink in the white ink canister at this time. The circulation system will fill the tubes that deliver the white ink to the dampers and print head. When charging the whole system the white ink tubes will be full and charging the whole system will waste a lot of white ink. White ink can be added after the CMYK tubes are full.

- Release any ink tube clamps that are closed.

  (Early Vipers did not have tube clips)



- Remove the lids of the bulk ink supply bottles.
- Remove the lids from the ink bottles at the rear of the Head Unit, and slowly pour the ink from the bottles into the corresponding printer bulk ink bottles.

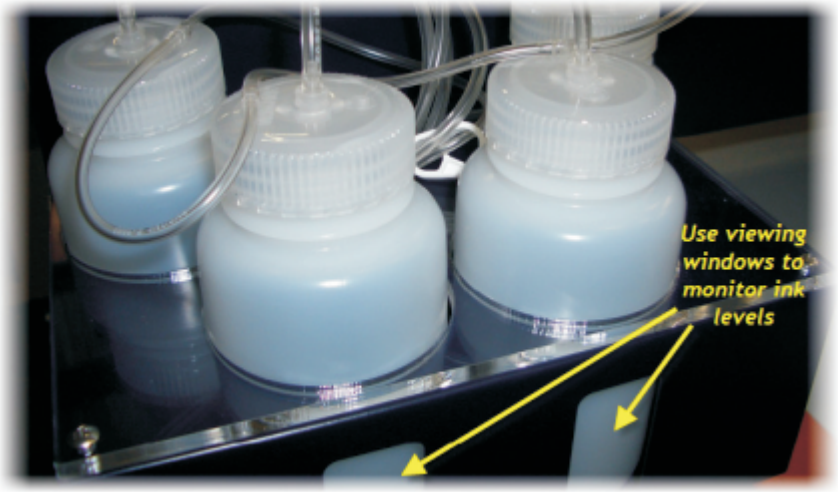


- Be sure to match the markings on the printer ink tubes to the ink:

  C= Cyan (blue) = Cyan Ink
  M= Magenta (pink) = Magenta Ink
  Y= Yellow = Yellow Ink
  BK= Black = Black Ink

  Large Canister = White Ink (Add white ink after colors are charged)

Please Note: Pour the ink gently so as to avoid creating air bubbles when pouring the ink. If bubbles are formed then do not run the printer until the majority of bubbles have settled (an hour or so).



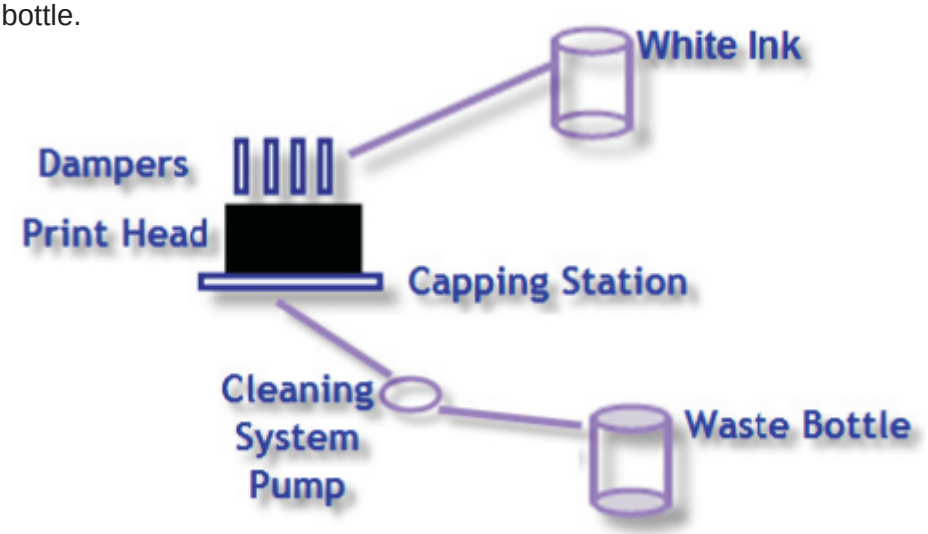
Ink levels in the printer ink bottles should be maintained at ½ to ¾ full at all times. In particular, the White Ink level must never be below 40%, doing so could cause the ink tubes to draw air into the system, requiring a re-charge of inks to re-fill the ink tubes. It is recommended that the ink levels be checked as part of the shut down maintenance routine, however levels should also be monitored & corrected during periods of high productivity on the printer.

5.6 Drawing Ink from the Ink Bottles to the Print Head

In order to print from the DTG Viper, you will first need to draw ink from the Ink Bottles through to the print head. This process is also referred to as Charging the Ink System. The WIMS circulation pump will have delivered White Ink through to the manifold which sits above the dampers, and the pressure pump for CMYK will have partially pushed the CMYK inks up the ink tubes towards the Print Head. However, the ink must be drawn into & through the print head.

You can do so by using the control panel.

The basic concept of this process is that the ink is “pulled” into the dampers & print head by way of suction that is applied via the capping / pump assembly to draw the inks through the dampers & print head (and capping /pump assembly) and (any excess) into a waste collection bottle.



The most efficient method for doing this is as follows:

- Press the MENU Button.
- Choose the MAINTENANCE option.
- Choose POWER CLEANING. This will initiate the printer pump and pull color ink through the tubes and to the dampers.

At this time the CMYK tubes are mostly full. It is now time to fill the white ink container and the WIMS system. Turn the printer off at the main power by the power plug connection.

- Make sure all tube connections are screwed together tight. Do not use tools to tighten the connections. Use only your thumbs and fingers to tighten to prevent breaking the plastic connections.
- Remove the cap on the white ink canister and fill the canister with white ink. Replace the canister cap and turn the power on at the base where the power plug connects to the machine. The circulation pump will come on and fill the circulation system with ink. Watch the ink run through the tubes until you see the return tube back to the canister fill with ink.

At this point now the color tubes and the white circulation tubes are full of ink. The dampers should have ink in them but probably aren't full. The nozzles too have ink in them but are not completely primed. It is time to run 2 head cleaning cycles to fully charge the dampers and print head.

- If the printer power on the control panel is not on at this time, turn it on now.
- When the printer has finished its start-up cycle, initiate the head cleaning cycle using the control panel or Epson driver.

  Control Panel: Press and hold the MENU button for at least 3 seconds.

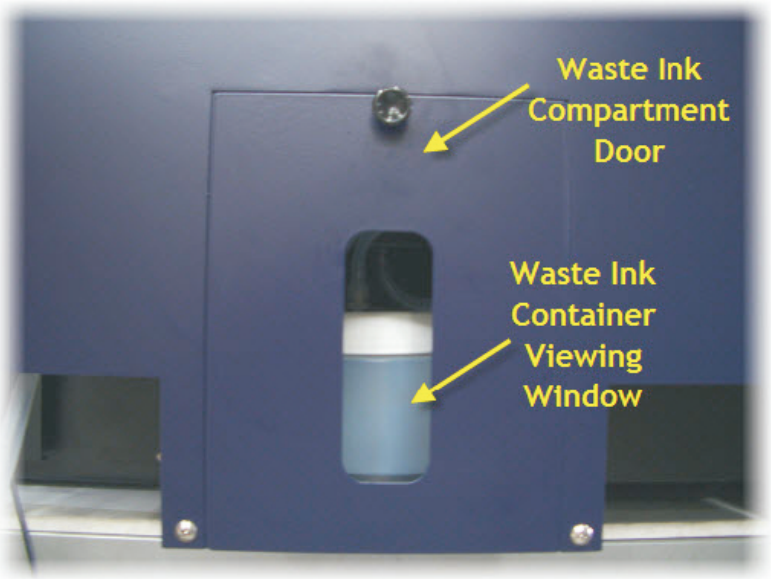
  Epson Driver: In Windows under Printers find the Epson Stylus Pro 4880. Right click and choose PRINTING PREFERENCES. Click the Utility tab. Choose Head Cleaning to initiate the head cleaning cycle.

For more information on Nozzle Checks refer to section 6.3.

From this point on, you will simply need to add ink to the bulk ink bottles as you use the system. Take care to avoid creating bubbles when doing so. Or alternatively, add ink after production has finished for the day, allowing bubbles to settle overnight before again using the printer. **Remember to keep ink bottles between 50% and 75% full at all times**.

5.7 Monitor and Empty the Waste Ink Container as Needed

Your DTG Viper™ comes with a Waste Ink Container which captures waste ink generated during charging, head cleaning & normal printing (all as described previously & further in this document). You will need to monitor the level of waste ink on a regular basis to ensure that the Waste Ink Container does not overflow.



Note: Pay close attention to the waste ink bottle. Always empty the bottle before filling the ink bottles, and monitor the waste ink level regularly during the operation of your DTG Viper™.

Always empty the waste ink container before running a Power Cleaning Cycle.

6 Basic Printer Operations

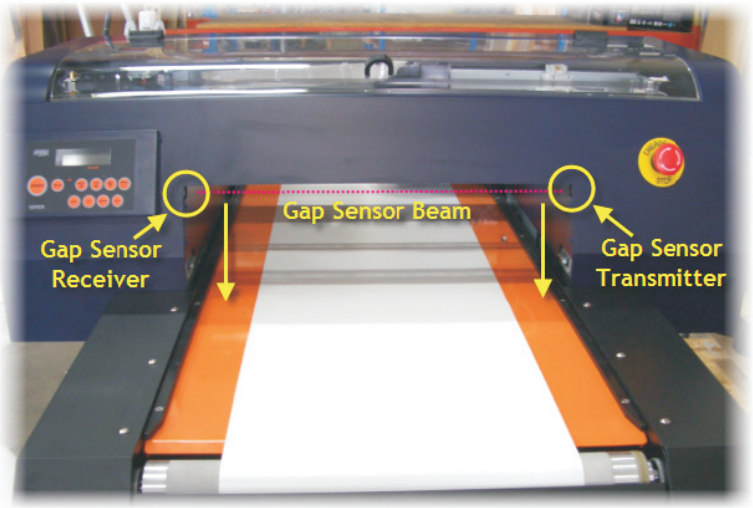
6.1 Loading Media

In order to start printing, you will first have to ensure that the media to which you wish to print is properly loaded to the “top of page” or “origin” position in the printer.

Remember that the DTG Viper™ is set to simulate Roll Feed paper via the conveyor, so in general, the printer will be set to print at any time – however you must ensure that the media is loaded to the correct position to ensure that the output prints to where you expect.

In addition, you need to ensure that your media is close enough to the print head during printing that you achieve good quality prints. If the media is set too low, the spray of ink from the print head can be diffused and create an unclear print. At the same time, it is important to not set the media too high so that it may cause the Print Head to brush or even strike it during printing. The Gap Sensor should be utilized to set the optimum media height:

- Ensure that the media (paper, garment etc.) is as smooth and flat as possible.
- The media should be positioned on the right hand side of the Printing Bed, such that the media will trigger the Media Sensor (by mechanical contact) when the Load button is pressed. Remember that the Origin point of the print space is the left corner opposing the Media Sensor. Take this into account when preparing artwork for printing.
- Place the media (on a Platen, if necessary) onto the Printing Bed (on the white conveyor belt). The leading edge of the media / platen should be placed such that it is no more than ¼” (5mm) past (toward the rear of the printer) the line of the Gap Sensor Beam.
- Ensure that the Gap Sensor is set to “auto” mode (indicated by the Green Gap Light).

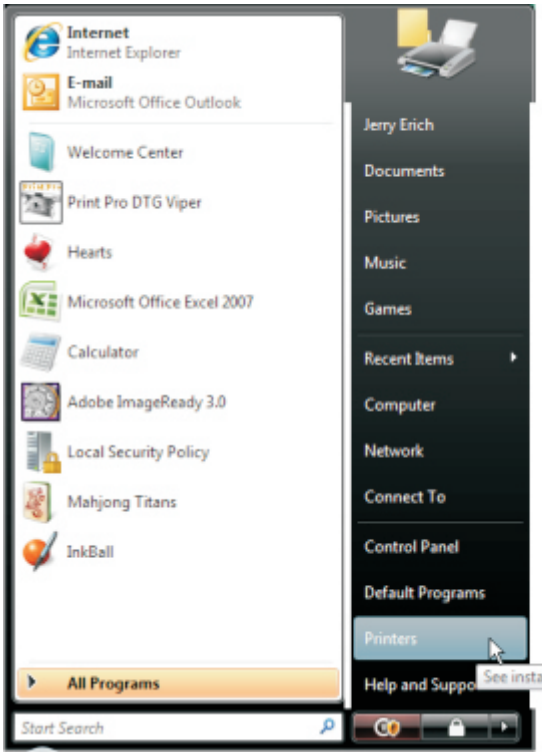


- Press and hold the Up button to raise the Printing Bed (and the media placed upon it) to the point where the Gap Sensor is triggered (indicated by the Red Gap Light). Once the Gap Sensor is triggered, the Printing Bed will lower slightly to set the correct “gap” between the media & the Print Head during printing.
- Press the Load button. This will start the forward movement of the conveyor in order to “load” the media to the top of page position (determined by the mechanical action of the Media Sensor). Any high points on the media behind the leading edge of the media may trigger the Gap Sensor, causing the Printing Bed to lower further. Ensure that the media is as flat as possible in order to minimize the gap between the media & the Print Head. If necessary, retrieve the media from the top of page position, smooth & flatten it, and repeat the steps above in order to optimize the printing gap.

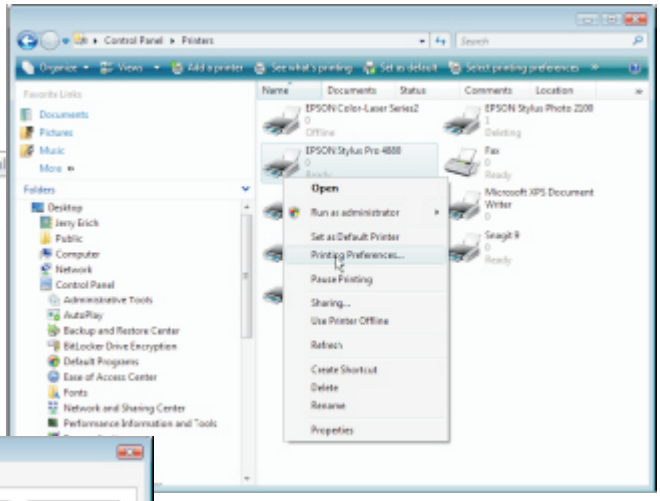
6.2 Configure Basic Printer Driver Settings

A printer driver is a piece of software that converts the data to be printed to the form specific to a printer. When you installed the Epson Stylus Pro 4880 driver (Section 5.5 above), a User Interface for the driver was also installed to your computer, we also refer to this interface as the Printer Driver.

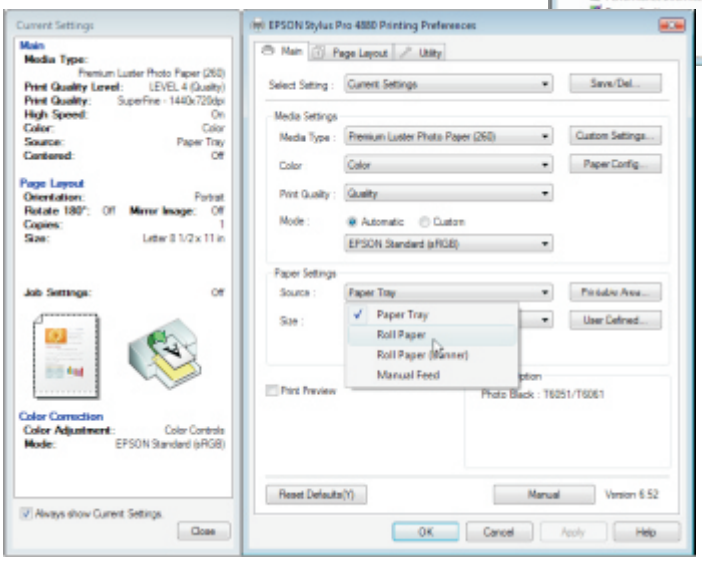
There are some basic settings which should be configured in this Printer Driver interface which will aid in the functionality of the DTG Viper™:



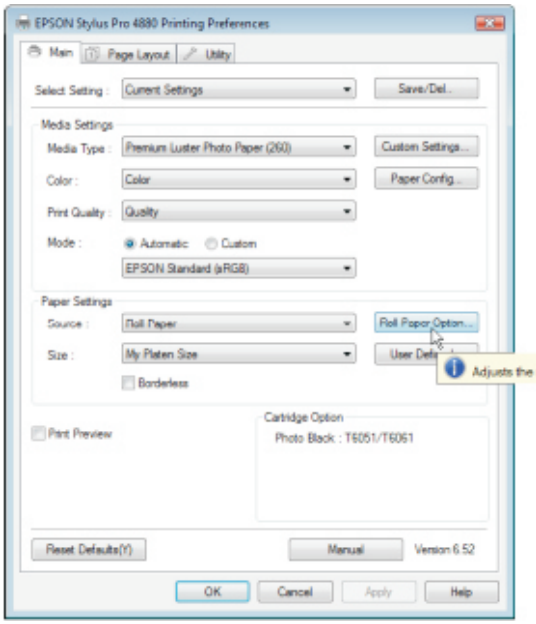
From the Start Menu in Windows, select Printers. If Printers is not listed in your Start Menu, choose Control Panel, then Printers. (If Printers is not on your Start Menu in Windows, you might consider adding it by changing your Properties for the Windows Start Menu, or adding a shortcut to Printers on your Desktop – refer to your Windows documentation for further information).



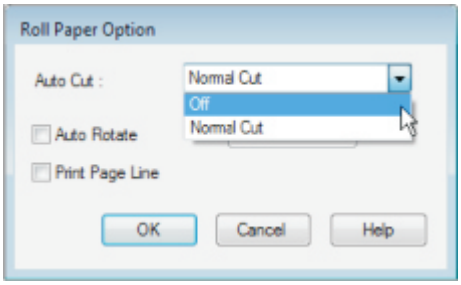
Using your mouse, Right Click over the Epson Stylus Pro 4880 icon, and select Printing Preferences from the displayed menu.



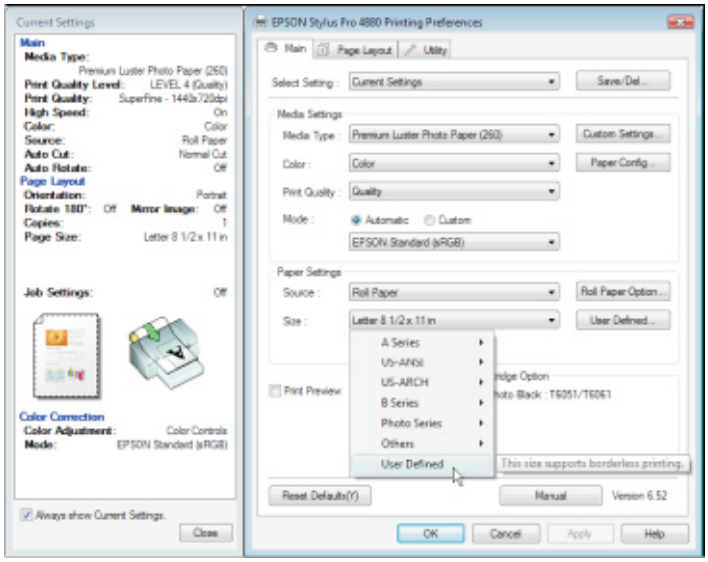
Under Paper Settings > Source, select Roll Paper.

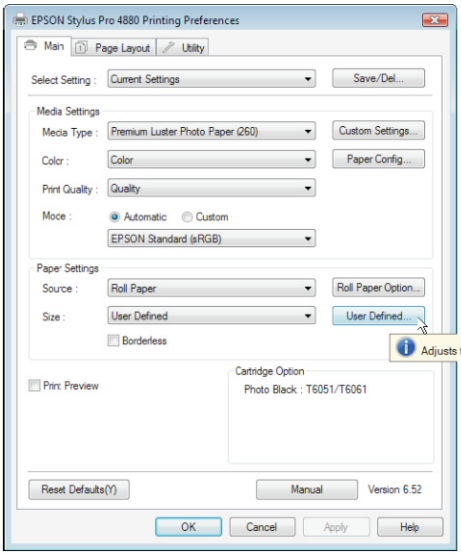


Click on the Roll Paper Option button, and select Off from the Auto Cut option list. Click OK.



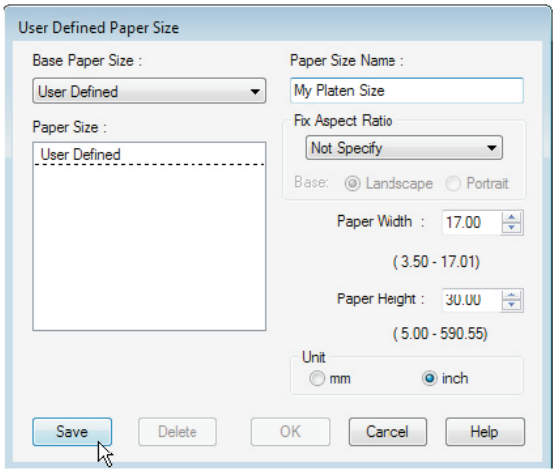
Under Paper Settings > Size, select User Defined.

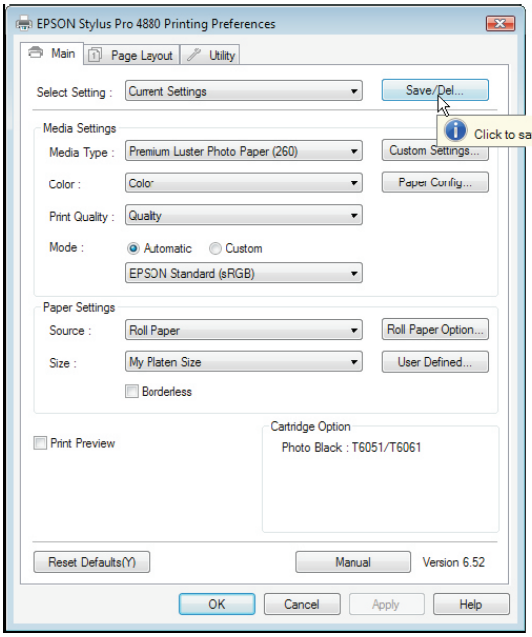




Click the User Defined button.

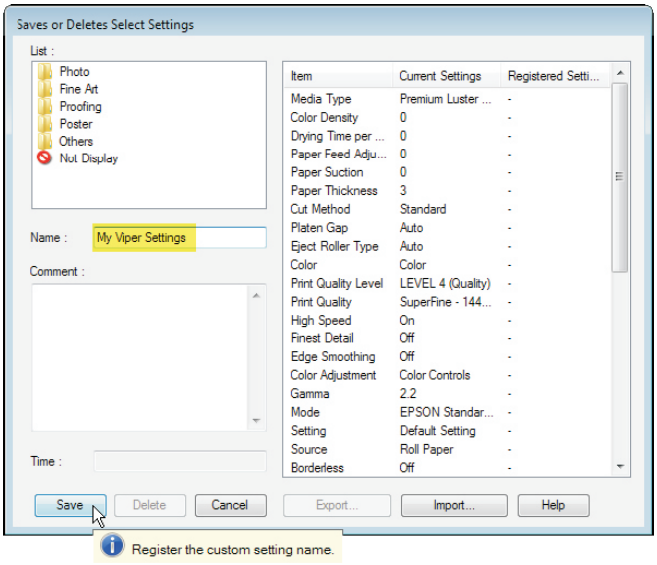
In the User Defined Paper Size dialog box, Enter a name for the size you are creating, and set the Paper Width to 17 inches, and the Paper Height to the same length as the standard or default Platen that you will using. In this example, we have set this to 31.7 inches. Click the Save button. The name will be saved in the Paper Size list and will be available for selection as the Paper Size. Click OK.





Click the Save/Del button (from Select Setting) to save these changed settings for easy retrieval in the future.

Give the Settings a Name, then click Save to register the Custom Setting Name.

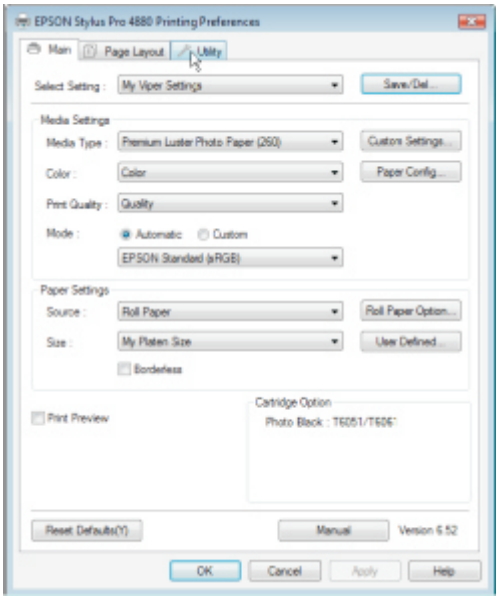


Click the Apply button on the Main tab of the Printing Preferences window to store all of these settings as the default settings for the printer. Click OK to close the Printer Driver.

6.3 Printing a Nozzle Check Pattern

NOZZLE CHECKS should be run every day wether you use the printer or not. This tells you when clogs are developing and you can run a few Head Cleaning Cycles to clear the issue. If these early clogs are not cleared out right away they will become a permanent part of the nozzles. Not doing Nozzle Checks on a regular basis will result in a terminally clogged print head. There are currently no solutions that will unclog textile inks. Replacing the Print head is the only resolution.

Perform a Nozzle Check when the printer is in a Ready state (the Control Panel LCD Display should show READY). Use a clear thin sheet of transparent plastic or a thin sheet of stainless steel to print the nozzle check on – place it on top of and to the front and left edges of your Platen. Place the Platen so that its leading edge is just inside the Printing Head Unit and ensure that the gap between the top of the Platen and the Print Head is at minimum: use the Up and Down buttons to adjust the height of the Printing Bed (with printing sheet on the Platen) as described above in Section 6.1 above. Press the Load button to move the Platen to the top of page position (also described above in Section 6.1).



The Nozzle Check Pattern can be printed from the Utility tab of the Printing Preferences dialog for your Windows Epson Stylus Pro 4880 printer driver.

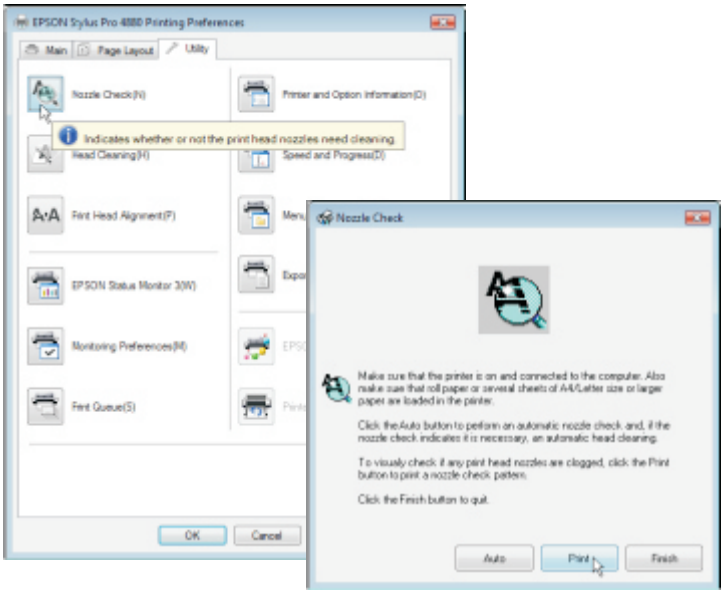
Nozzle checks can also be printed directly from the control panel of the Viper. Press Menu and scroll down to find Test Print. Press Menu to select Test Print and then choose Nozzle check. Press Menu to select Nozzle Check and then press Menu again to execute the Nozzle Check.

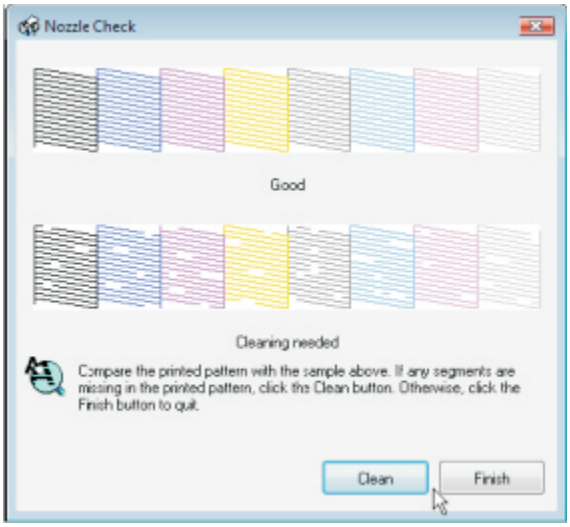
Click on the Nozzle Check icon.

In the Nozzle Check window, click on Print to start printing the Nozzle Check pattern.

DO NOT click the Auto button, the functionality for this is not supported by the DTG Viper™.

Once the pattern has printed, the Printing Bed will move the Platen to the ejected position at the back of the printer.


EPSON Stylus Pro 4880 Printing Preferences
Main
Page Layout
Utility
Nozzle Check(N)
Printer and Option Information(O)
Indicates whether or not the print head nozzles need cleaning.
Head Cleaning(H)
Speed and Progress(D)
Print Head Alignment(P)
EPSON Status Monitor 3(W)
Monitoring Preferences(M)
Print Queue(S)
OK
Cancel
Nozzle Check
Make sure that the printer is on and connected to the computer. Also make sure that roll paper or several sheets of A4/Letter size or larger paper are loaded in the printer.
Click the Auto button to perform an automatic nozzle check and, if the nozzle check indicates it is necessary, an automatic head cleaning.
To visually check if any print head nozzles are clogged, click the Print button to print a nozzle check pattern.
Click the Finish button to quit.
Auto
Print
Finish

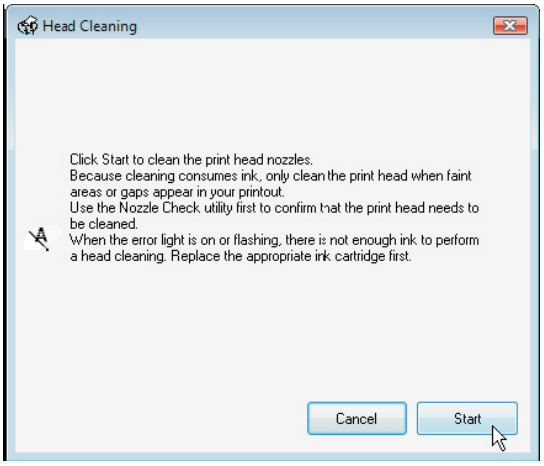

Nozzle Check
Good
Cleaning needed
Compare the printed pattern with the sample above. If any segments are missing in the printed pattern, click the Clean button. Otherwise, click the Finish button to quit.
Clean
Finish

The Nozzle Check pattern that has printed will look something like the pattern displayed on your computer screen and in the screen shot shown here. The major difference will be that instead of the 4 light colours shown on screen and to the left here, your printed output will be white ink for these 4 blocks. This is because the DTG Viper™ uses these 4 Epson Stylus Pro 4880 ink channels for its white ink supply.

As suggested in the dialog box above, compare your printed pattern with the sample on screen. If any segments are missing in the printed pattern, click the Clean button. If each of the eight blocks within your printed pattern are complete, your DTG Viper™ is fully charged with ink, and has no blocked ink nozzles. In this case, click the Finish button to quit. Often, if your printed pattern has a few small segments missing, it can be more efficient & effective to send a complete print job through the printer to clear these missing nozzles.

6.4 Print Head Cleaning

Should your printed Nozzle Check pattern (see previous section) have missing segments, you can execute a Print Head Cleaning in an attempt to clear those missing segments. If you clicked Clean from the Nozzle Check dialog, or if you clicked on Head Cleaning from the Utility tab of the Printing Preferences dialog of the printer driver you will be presented with the following Head Cleaning dialog.


Head Cleaning
Click Start to clean the print head nozzles.
Because cleaning consumes ink, only clean the print head when faint areas or gaps appear in your printout.
Use the Nozzle Check utility first to confirm that the print head needs to be cleaned.
When the error light is on or flashing, there is not enough ink to perform a head cleaning. Replace the appropriate ink cartridge first.
Cancel
Start

Click on the Start button to execute the Head Cleaning function on the printer. This will execute a Print Head Clean which involves the printer both pumping a little ink through the Print Head and moving the Print Head across a Wiper Blade which wipes excess ink from the face of the Print Head. Both of these actions can assist in clearing blockages in print head nozzles and / or further charge the Print Head with ink.

Once the printer has finished the Head Cleaning you can execute the print of a Nozzle Check pattern using the Epson Driver or the control panel.

You can cycle between the Head Cleaning and Nozzle Check Pattern print until your printed Nozzle Check Pattern is complete. It is not recommended to run this cycle more than 3-4 times. If there are still missing segments in your Nozzle Check Pattern print after 3-4 cleans, contact your dealer support department for trouble shooting help. Failure to correct a poor nozzle check in a timely fashion will result in a terminally clogged print head.

6.5 Power Clean

In some instances, the Head Cleaning mentioned above in Section 6.4 is not strong enough to clear stubbornly blocked nozzles. In these cases, it may be necessary to run a Power Cleaning on the printer via the Control Panel menu.

It must be noted that this process consumes a considerable amount of ink and should only be used in extreme situations:

- Ensure that the Waste Ink Canister / Bottle is empty
- The printer must be in a READY state.
- Press MENU from the Control Panel – PRINTER SETUP will be displayed.
- Press FWD (Forward) or REV (Reverse) until MAINTENANCE is displayed, press MENU.
- Press FWD (Forward) or REV (Reverse) until PWR CLEANING is displayed, press MENU.
- The Control Panel display will ask you to confirm the Power Cleaning and acknowledge that you will be required to move the Ink Levers during the Cleaning process.
- Press MENU to start the Power Cleaning process.
- Do not leave the printer unattended during this process, there will be messages on the Control Panel display asking you to raise and lower the Ink Levers at various times.

Note: After you have raised or lowered the Ink Levers, the display may ask you to Raise or Lower a particular lever, even though you have already done so. These messages should clear after a minute or so and the printer will continue the Power Cleaning function. DO NOT try to raise/lower the Ink Lever in question again as this will cause the Power Cleaning function to restart from the beginning.

Power Cleaning Cycles can be done to charge the system with ink or flush the system out with DTG Flushing Solution. A printer should be flushed when ever the printer will be unused or un-maintained for over one week.

6.7 Resetting Cartridges

As discussed previously, your DTG Viper™ is based upon the Epson Stylus Pro 4880 printer. This standard printer uses 110 or 220 ml ink cartridges instead of the dampers and bulk ink system used in the DTG Viper™. The standard printer uses micro-chips on the ink cartridges to “count” ink drops that pass through the print head to determine when a particular cartridge is getting low on ink. The printer will then flash the corresponding cartridge indicator on the Control Panel as a visual warning to the user.

This function is embedded in the firmware of the printer and as such is a function which carries over to the DTG Viper™. Neither the Epson 4880 printer nor the DTG Viper™ can tell how much ink is actually in the bulk ink bottles of the DTG Viper™. “Dummy” cartridges are provided with your DTG Viper™ purely to satisfy the firmware requirement that cartridges are installed.

Ink consumed during printing, head cleans and ink charges all contribute to the ink drop count, once the count reaches the limit for the installed cartridge(s) the Control Panel lights and LCD display will signal warnings & the cartridges will require resetting.

Occasionally, the cartridges may error, and the LCD display will show various messages such as SET INK CARTRIDGE or WRONG INK CARTRIDGE. The cartridges will also require resetting when this occurs.

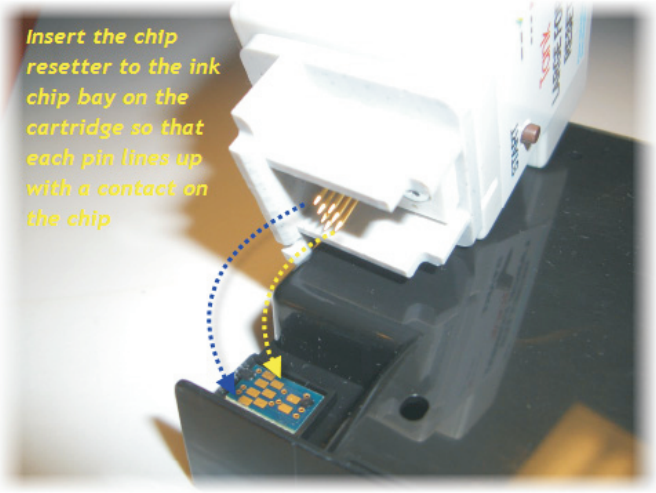
To identify which cartridge requires resetting, refer to the Control Panel display. Generally, the “offending” cartridge will be indicated by a flashing box or a box with a line through it (depending on the error) on the Control Panel LCD Display. The boxes on the LCD display represent each of the 8 cartridges housed in the Cartridge Bays at the rear of the printer, in the same order as you view them when standing at the rear of the printer. For example, if the following is displayed on the Control Panel LCD Display, you would remove & reset the very left hand cartridge of the LHS Cartridge Bay (when you are facing the rear of the printer).

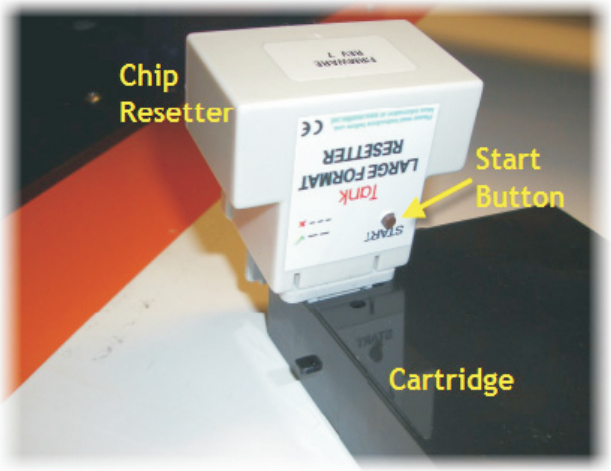
The method of resetting the cartridge will depend on the Error Message displayed in the Control Panel LCD display. Please refer to the table below for the required Reset method in each case.

Using the Chip Resetter

Most cases will require the use of the Chip Resetter which is supplied with your DTG Viper™.

- Remove the cartridge(s) to be reset from the Cartridge Bay(s) by first raising the Ink Lever for that bay, then sliding the cartridge out of the bay.
- Apply the chip resetter to the Ink Chip as shown.





- Press the Start Button on the Chip Resetter.
- The small LED at the back of the Chip Resetter should flash Red slowly 6 times to indicate that the reset has been successful.
- If the LED flashes quickly / erratically, the reset has failed. Reposition the Chip Resetter on the cartridge & attempt the reset again.
- Once the cartridge ink chip has successfully been reset, slide the cartridge back into the Cartridge Bay.
- Once all cartridges that require resetting have been reset and returned to the appropriate Cartridge Bay, lower the Ink Lever(s).

Message / Indicator	Reset Procedure
INK LOW / Ink Light Slow Blink	Cartridges can be reset by raising, then lowering the Ink Levers
REPLACE INK CRTG / Ink Light Solid	Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD.
INK OUT / Ink Light Solid	Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD.
INVALID INK CRTG / Ink Light Solid	Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD.
WRONG INK CRTG / Ink Light Solid	Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD.
NO INK CRTG / Ink Light Solid	Reset the Cartridge(s) as indicated by the cartridge indicator on the Control Panel LCD.

Note: You may receive a Control Panel display message to the effect of "insufficient ink to complete this operation" when you execute a Power Clean. This means that the ink chip count on one or more cartridges is high, and as there are no indicators as to which cartridge(s) this message applies, all 8 Cartridges will need to be reset.

Resetting the cartridges "refreshes" them to a state where the printer will think they are new, but non-genuine Epson cartridges. The Control Panel LCD will display messages asking you to acknowledge the use of non-genuine Epson cartridges.:

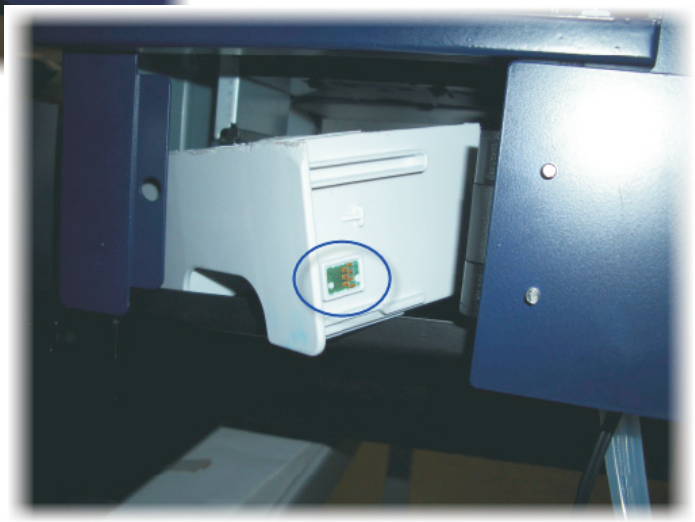
- Panel will display NON-GENUINE...
- Press the FWD button to scroll through the message lines, until <YES NO> is displayed, then press the SELECT button.
- The panel will display THIS MAY VOID...
- Press the FWD button to scroll through the message lines, until <ACPT. DECLINE> is displayed, then press the SELECT button.
- The panel will display PLEASE WAIT and then PAUSE and then READY.
- The printer is now in a READY state.

6.8 Resetting the Maintenance Tank

During the Head Cleaning process your DTG Viper™ forces ink through the print head. This excess ink goes into a holding bottle called the **Waste Ink Canister / Bottle**, accessible through the door on the right front side of the Panel. In the standard Epson Stylus Pro 4880, this excess ink is passed into a holding tank called the Maintenance Tank. This tank has an ink counting chip, similar to that found on the ink cartridges. In this case, however, the Maintenance Tank chip will create an error when it is full, or near full.

This function is embedded in the firmware of the printer and as such is a function which carries over to the DTG Viper™. The front end of the Epson Maintenance Tank, complete with the ink count chip, is located at the rear of the DTG Viper™, beneath the RHS Cartridge Bay.

As with the ink count chip on the Cartridges, the Chip Resetter can be used to reset the Maintenance Tank Ink count chip.



If the following messages / indicators appear on the Control Panel, open the Maintenance Tank Compartment, slide out the Maintenance Tank and apply the Chip Resetter to the ink count chip on the side of the Maintenance Tank as described in Section 6.7 above. Once the chip has been reset successfully, slide the Maintenance Tank back into the compartment, and close the door. Control Panel will display:

MNT TK NEAR FULL
MNT TK FULL

The display panel may occasionally display NO MNT TK. This error may be caused by a slight shifting of the maintenance tank due to vibrations during printing. If this error is displayed, simply slide out the Maintenance Tank slightly and push it back in to re-seat the Maintenance Tank.

7 Printing on Textiles with the DTG Viper™

Printing on textile items with the DTG Viper™ is a very simple process involving five easy steps:

1. Create an image in any of your graphics programs
2. Prepare a T-shirt or other textile item for printing
3. Load a T-shirt or other textile item onto the printer
4. Set-up your image for printing with the RIP program
5. Press the Print button.

Once you are comfortable with the basic operations of your DTG Viper™, you are ready to proceed!

7.1 Basic Steps for Printing T-Shirts

Turn the DTG Viper™ unit on
Ensure that the A/C power supply is connected and switched on at the rear of the Viper. Press the POWER button at the Control Panel to turn the Printing Head Unit on (if it is not already on).

Prepare the garment to be printed
Lint is one of the biggest enemies of the DTG Viper™. By shaking your garment (away from the printer) prior to use, you can remove some of the excess lint from the garment. Pressing the garment can also help to contain excess lint. White or light colored garments which do not need white ink require no further preparation.

Dark fabric, and some colours require a pre treatment process. The pre treat / underbase forms a special receptive surface for the white ink to adhere to. POOR PRE TREAT = POOR PRINT QUALITY. Application of the pretreatment solution is key to obtaining white opacity and ink adhesion to the fabric.

Equipment needed for proper pretreatment solution application:

Foam Roller (the type used for painting) - optional

Power Sprayer - (airbrush, air pump sprayer, fine mist power sprayer, such as Wagner® Power Sprayer Model HVLP)

T-shirt Heat Press

Release Paper (Teflon Sheet, Parchment paper, or Quillon paper)

Application of DTG White Ink Pre-Treatment Solution

DTG is committed to providing you with the most up to date information regarding the processes surrounding the evolution and development of the Direct To Garment printing process. The information provided below will give some additional and most current information for the best methods of application and process to give you the best prints and wash-ability.

Benefits of this improved pretreatment include:

- Fewer printed t-shirt defects
- Less sensitivity to fading due to UV Exposure
- Reduced post-pressing shine

The DTG White Ink Pre-Treatment solution is for use only with DTG white ink. In order to achieve consistent and even white prints on dark or light colored cotton fabrics, proper application of the DTG White Ink Pre-Treatment solution must be practiced. Application of the pretreatment solution is key to obtaining white opacity and ink adhesion to the fabric.

Equipment needed for proper DTG White Ink Pre-Treatment solution application:

- N95 Approved Respirator (3MTM Model # 8210 or similar)
- Foam Roller (the type used for painting)
- Liquid Mistifier (airbrush, air pump sprayer, fine mist power sprayer, such as Wagner® Power Sprayer Model HVLP)
- T-shirt Heat Press
- DTG Release Paper - Part# - DTGRPAPER (In some cases, parchment paper with silicone base may cause insufficient bonding issues)

Recommended procedure:

The following procedure will help ensure consistent quality and performance of the DTG White Ink:

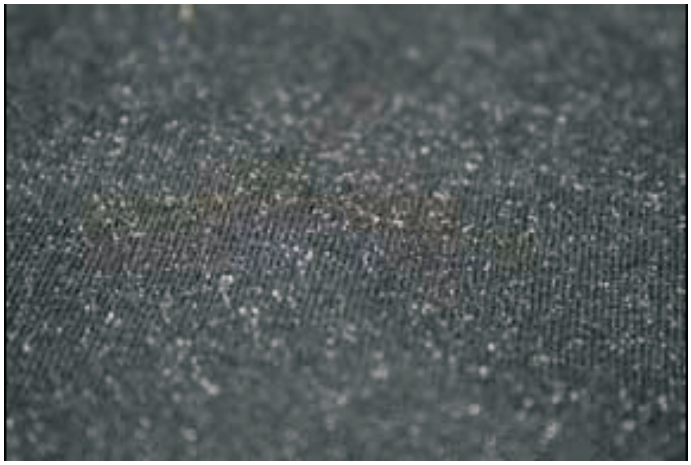
1. Agitate or shake the pretreatment solution prior to filling your sprayer. Locate the sprayer area in a different room than your printer(s). Overspray can find its way into the printer and potentially damage the device.
2. Locate the sprayer area in a well ventilated area. Set the heat press for 170°C (~340°F)
3. In humid environments, it is often beneficial to pre-press the shirt (using the parchment paper as a barrier from the press) for 10 to 15 seconds prior to applying the pretreatment. This removes some of the water naturally trapped in the fibers.
4. Using the spraying system, spray DTG White Ink Pre-Treatment solution evenly on the area that is to be printed. The recommended coverage is about 20g to 25g (0.7 oz to 0.9 oz) for a 14" x 17" printing area.

For example :

- Set your sprayer for medium coverage. This is normally the setting between no liquid being sprayed and the maximum available.
- Prime the sprayer for a few seconds by spraying into a large cup, but not on to the shirt area. This helps prevent larger drops that occur when the sprayer is starting up.
- Keep the sprayer about 12 inches (0.3 meters) from the shirt and begin spraying from the top to the bottom in a left to right (and then reverse, right to left) motion without ever turning off the sprayer.
- It is good practice to allow the sprayer to go beyond the edges of the shirt before beginning or reversing direction. This prevents more pretreatment from being deposited on the shirt during the direction change.
- If all settings correct, you should dispense the proper amount of pretreatment solution in about 15 seconds.

5. Following the application of the pretreatment solution, and prior to heat pressing, close examination of the garment's surface should show the appearance of fine droplets not unlike dew on grass.

A representation is shown below:



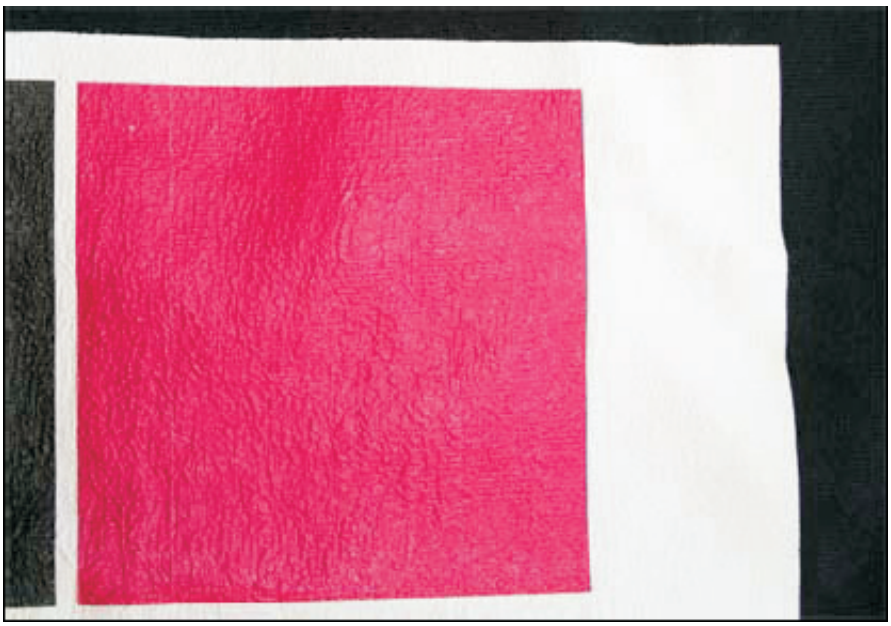
6. After spraying the garment, wipe with the foam roller, uniformly and in one direction, to get even coverage.
7. For best image quality, drying the pretreated garment in a t-shirt press (using the parchment paper or Teflon sheet as a barrier from the press) is preferred. A minimum of 15 seconds, up to a maximum of 60 seconds at the 170°C (~340°F) setting.

Examples:

1) Correct Pretreatment:

The image below represents a shirt that has been properly pretreated, printed, heat-pressed and subsequently washed through three (3) industrial washes. Note the white underbase and color retention.

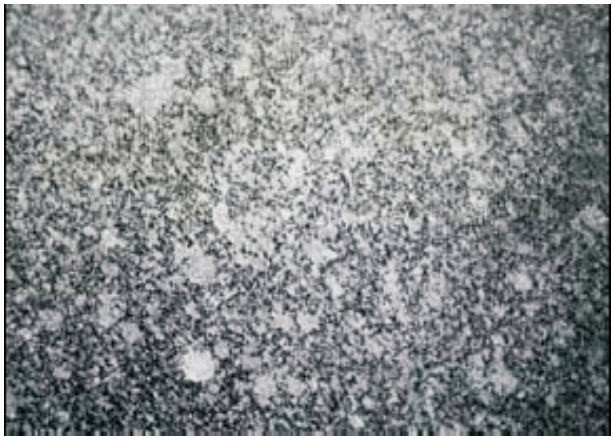
This is a properly treated, printed and post-treated shirt.



2) Insufficient Pretreatment:

If too little pretreatment solution is applied, the white ink will have a mottled appearance after printing. This is due to an insufficient amount of pretreatment to keep the white ink layer on the surface (the ink soaks into the fibers of the shirt).

An example of insufficient pretreatment:

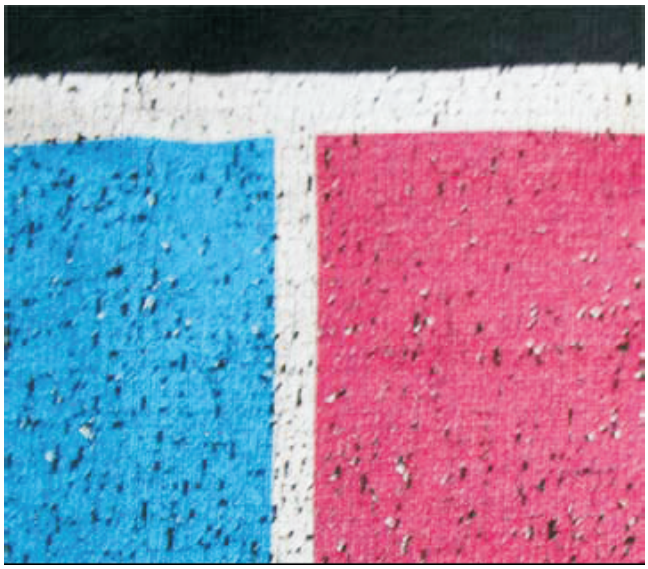


3) Excessive Pretreatment:

Applying too much pretreatment solution will provide you with a very good looking print prior to washing. However, excessive application of pretreatment will cause poor wash fastness and durability. The white layer becomes much more susceptible to flaking off of the shirt in a wash if too much pretreatment is applied.

On the right is a shirt with an excessive amount of pretreatment looks very good after printing and pressing:

The same shirt, with excessive pretreatment solution applied, is shown below after washing. This shirt exhibits the cracking and loss of color associated with too much pretreatment being applied.



Print Your Image.
Refer to the manual for your DTG RIP Pro.

Checking PRINT QUALITY
Print quality is an extremely important component of the printing process. You can check the print quality by doing a Nozzle Check from the Utility tab of the Printing Preferences dialog of the printer driver (more information in section 6.4 (Print Head Cleaning) of this manual). Be aware that you will need to do a Head Cleaning:

if any streaking appears in the print
if small drops of ink get on the garment during a printing cycle
if the unit has been sitting for a few days
if the printing head brushes the garment

To have DTG Viper™ go through a head cleaning process without going through the printer driver, press and hold the Menu button at the Control Panel for four seconds. Severe head clogging may require you to do several head cleaning cycles one after the other. This can be done during printing, the printer will resume printing once it has finished cleaning.

After Printing Has Finished.
After DTG Viper™ has finished printing, the Printing Bed will automatically eject the platen to the front of the printer.

Remove the GARMENT.
Carefully remove the garment from the Platen, so as not to smudge the wet ink.

HEAT CURE Your Finished Print
Heat Press Times and Temperatures

All DTG Processes on the Heat Press are done at:

340° Fahrenheit / 170° Celsius

Time on Heat Press:
Pre-Treat after spraying: **30 sec**. *(Never less then 15 sec. or greater than 60 sec.)*
Without White Ink: **2 min.** *(If scorching occurs, divide in to two times at 1 min.)*
White Ink: **3 min.** *(If scorching occurs, divide in to two times at 1 min. 30 sec.)*

Note: White Ink Underbase prints have a large amount of ink. It is best to hover the heat press over the print for 30 seconds before curing to flash dry.

7.2 Canceling a Print Job

- Firstly, press the PAUSE button on the Control Panel to halt the printing.
- Cancel / clear the print job from the RIP and / or the Windows Print Queue.
- Press and hold the PAUSE button on the Control Panel to reset the printer. RESET should be displayed on the Control Panel LCD display, followed by READY once the reset is complete.
- In rare instances, you may need to disconnect the power to the printer to fully clear the print job.

8 General Care & Maintenance of your DTG Viper

While your DTG Viper™ is built with many standard components from the Epson Stylus Pro 4880 printer, uses the standard Epson Stylus Pro 4880 Windows printer driver, and shares the ease of use of a standard desktop printer, that's where the similarities end. Your Viper will be operating under what could be considered extreme conditions for a desktop printer – exposure to pretreatment sprays and lint from garments, and pushing out increased volumes of ink (when compared to standard "paper" printing). As such, it is important that you take a few minutes each day to properly maintain your DTG Viper™ – this will ensure that it runs in optimal condition.

8.2 Run a Nozzle Check utility each day before starting production

You'll discover any missing nozzles BEFORE they show up on your printed garment! Run Head Cleaning Cycles if nozzle check has missing nozzles. Refer Section 6.1 Printing a Nozzle Check Pattern for further information.

8.4 Keep the capping station and wiper blade free of ink build-up

The Capping Station and Wiper Blade both play a critical role in cleaning the Print Head and preventing ink clogging in the Print Head. It is therefore very important that both of these components be kept in good working order. The biggest challenge to keeping these components performing at their best is the ink itself. Over time, excess ink can build up and harden on and around the Wiper Blade & Capping Station.

The Wiper Blade acts like a car windscreen wiper in wiping ink off the print head. If the Wiper Blade itself has hardened ink on it, then it is unlikely to work very well in cleaning the Print Head. Similarly, if the outer edges of the Capping Station have dried ink build up on them, this can prevent a good seal around the Print Head when it is in its "home" position (at the left of the Head Unit), thus allowing air to get in and potentially dry any ink in the Print Head Nozzles.

Turn the Printing Head Unit off. Remove any platens from the Printing Bed. Release the Print Head Carriage from its home position on the left hand side of the Head Unit by pressing down on the black knob and gently sliding the Print Head Carriage to the right. This will give you easier access to the Capping Station and Wiper Blade which are positioned beneath the Print Head Carriage's normal home position at the left of the Head Unit.

The Wiper Blade is normally pushed back, out of the way during normal operation of the printer. To access the Wiper Blade to clean it, you will need to execute a head cleaning cycle and watch the capping station as the head moves back and forth. When you see the wiper blade slide over press the Emergency Stop Button to stop the cycle with the wiper in place.

Using a foam tip applicator dipped in cleaning / flushing solution (available from your DTG dealer), wipe the excess ink away from the Wiper Blade.

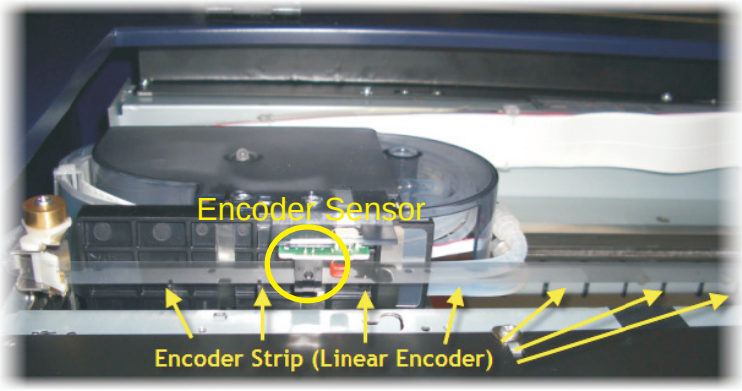
Using a foam tip applicator moistened with cleaning solution, firmly clean around the rubber lip of the cap in the capping station. Do not apply excess force as you may knock the capping station from the springs which support it.

Ensure that there are no hairs or fibers lying over the cap as these will also prevent the capping station from functioning correctly.

A pair of long nose tweezers is useful for pulling dried ink / fibers away from the capping station seal / perimeter. Do this with your daily maintenance to insure the best quality printing.

8.5 Clean the Encoder Strip

The Encoder Strip is the thin plastic strip that runs in front of the Print Head for the length of the carriage area. It looks to be clear or at least slightly grey in color, but is in fact clear with hundreds of fine vertical marks on it. There is a sensor that sits in front of the Print Head carriage which “reads” these vertical marks so that the Print Head knows exactly where to spray the ink. You can understand that if this strip gets dirty, the sensor will be unable to read these marks properly and your printer is likely to get “confused”. Lint from your garments, ink overspray, and even airborne pre-treatment spray can all contribute to a grime build-up on the Encoder Strip, and it is important that you clean this strip at least weekly, even daily if you have a high daily production volume:



Using a soft clean (lint-free) cloth, or a sponge tip applicator, moistened with distilled or purified water, or Isopropyl Alcohol (NOT rubbing alcohol), GENTLY rub both faces of the encoder strip. If the cloth or applicator gets dirty, discard it and use a clean one. Move the print head to the right so that you can clean the entire length of the encoder strip. Allow the encoder strip to dry thoroughly before using the printer again.

Note: Make sure the encoder strip is in the sensor. If encoder strip is not in the sensor properly the control panel will show the following: SERVICE REQ. 00010004.

Ensure that you return the Print Head to its home position when you are finished.

8.6 Clean & Lubricate the Print Head Carriage Bearings & Rails

Inspect the Print Head Carriage Shaft regularly & remove any dust & grime build up with a soft dry cloth.

Clean the Undercarriage Ramps and the silver metal scarf around the print head face with DTG Cleaning Solution every day when you preform your daily maintenance.

8.7 Clean the Drive Roller and Belt

The Drive Belt & Roller can collect a build up of pre-treatment, dust & lint in their “teeth”. An excessive build up can cause the Print Head to “skip” during printing.

Use a small brush (tooth brush) to clean the teeth of the Drive Belt and the Drive Roller. You may also need to use a small sharp object and/or a small pair of tweezers to remove stubborn build up. This should be done monthly, or more frequently if your DTG Viper™ produces high volumes of output.

Take care not to touch the encoder strip during the cleaning process as it can be easily damaged, and attempt to “capture” any debris removed from the Drive Belt so that it does not contaminate other working components of the printer.

8.8 Environmental Conditions

It is important to maintain consistent environmental conditions so that your DTG Viper™ can run at its best. Inkjet printers like humidity levels of 40 – 70%. They do not like extremes in temperature, so it is best to operate your DTG Viper™ in an air conditioned environment – but not such that fans are blowing directly across the printer (and therefore the print head which may dry the ink in the print head itself). As the ink needs to be stored no less than 5° Celsius (41°F) and no more than 30° Celcius (86°F), this is also the recommended operating & storage temperature range for your DTG Viper™.

Dust is also an enemy of the DTG Viper™ (in fact, any ink-jet printer). The working environment should be relatively dust free.

8.9 Clean your DTG Viper™

Lint, dust and pre-treatment over-spray can build up and interfere with not only the “internal” workings of the printer, but also the operation of the printer bed. Turn the printer off and clean all accessible surfaces of the printer with glass cleaner and a soft cloth (do not spray the cleaner directly onto the printer, rather onto the cloth) to remove dust & grime build up. Cover your DTG Viper™.

We recommend that you cover your DTG Viper™ when it is not in use – use a small (clean) tarpaulin or similar) to help prevent dust from entering the carriage area of the printer and to help prevent the print head from drying out.

8.10 Avoid White Ink and Pre-Treat Separation

As explained earlier in this User Guide, by its very nature, white ink is prone to “separation”, i.e. the separation of the pigment (the bits that give the white ink its opacity) from the binder (the bits that bind the pigment to your garments). Pre-treat also need to be shaken to help keep the reactant and the adhesive consistent.

Shake any white ink and pre-treat bottles that you have in stock in order to maximize the shelf life of the white ink.

8.12 Ink Levels

It is recommended that you keep your ink bottles (particularly the white ink) ½ to ¾ full at all times. This will help to ensure consistent ink delivery to the Print Head.

8.13 Pre-Treat garments away from the printer

The pre-treatment for printing of white ink is very sticky, and airborne particles of the spray can very easily find their way into, and clog up the moving parts of your DTG Viper™.

For this reason, we recommend that you spray the white ink pre-treatment to your garments in a separate room, or at the very least, make up a “spray booth” to contain the spray so that it does not contaminate the printer. The spray station should be at least 5 meters (15 feet) away from the DTG Viper™, with forced extraction of the pre treat vapors.

8.14 Decline in Print Quality

If the quality of your printed images declines, either with dots or lines missing, or you have an unexpectedly light print, you may need to clean the print head to unclog the ink nozzles. Letting any of the ink bottles run dry, or leaving the printer sitting without use for a few days, may also dry out the ink nozzles.

Cleaning the Print Head is an easy process. All you need to do is hold down the **Menu** button on the Control Panel of the Printer for **FOUR SECONDS** or go to the Epson Stylus Pro 4880 printer driver on your computer and select the **Utilities** tab from Printing Preferences. This will give you slightly more control over the cleaning process. Run a Nozzle Check to see how effective the head cleaning cycle was.

Refer to Section 6.4 above for further details.

Please Note: Never turn off the printer while the power light is flashing (unless otherwise instructed in this manual or by an authorized DTG representative) as this may damage the printer.

Please Note: It is possible to do a head cleaning at any time, even when the printer is printing. Printing will stop while it cleans the heads and resume where it stopped when cleaning is finished.

Please Note: It is recommended that you do a head cleaning if you see any drops of ink on the garments you are printing, or if the Print Head comes in contact with the garment. The cleaning process will also clean the bottom of the Print Head.

8.16 Waste Ink Bottle Maintenance

During the Head Cleaning process your DTG Viper™ forces ink through the print head. This excess ink goes into a holding bottle called the **Waste Ink Bottle**, accessible through the door on the left side of the printer below the control panel. Check this bottle regularly, and empty it when it is getting full or before an ink flush or power clean procedure. Remember you must comply with local regulations for disposal of waste ink.

8.17 If Printer is Not Used for Some Time

If the printer is to be left idle for a long period of time (1 – 2 weeks), then you should flush the system with flushing solution – please see the section for instructions on flushing the system of ink. **Do not** leave ink in the system unused for a long period of time.

*****Use only DTG Flushing Solution*****

9 Product Support

Our Support Policy

We offer FREE support for the DTG Viper™. Operating the unit is relatively easy, particularly if you follow the guidelines covered in this User Guide.

Support can be obtained by contacting the DTG Dealer or Agent from whom you purchased your DTG Viper™. Support will generally be available during the Dealer or Agent's normal business hours.

Before calling, please have your serial number at hand with specific details of the problem. If you have received an error message, please include the error number. You may find it easier to fax your questions before calling our support line.

Epson Support

The DTG Viper™ is NOT supported by Epson as it is a highly modified version of an Epson Stylus Pro 4880 with hundreds of additional parts that are not provided by Epson. Epson will not provide support for the driver. You must obtain any support for the Epson Driver and any internal Epson components you require from your DTG Dealer / Agent.

Third Party Software Support

We will make every attempt to help with printing from programs like Corel Draw, Photoshop, Illustrator, etc., but we do not offer free support or training on these programs.

10 Requirements for PC

Minimum System Requirements for Windows

• Microsoft Windows compatible PC with a Pentium IV or better (Windows XP or higher)

• a minimum of 2GB of RAM is recommended.

• a minimum of 100GB on your hard disk.

• A display monitor with high resolution.

• CD-ROM or DVD drives for installing the Printer Drivers.

Please Note: your RIP and graphics software will have additional system requirements. Please refer to your DTG Dealer for full specifications.